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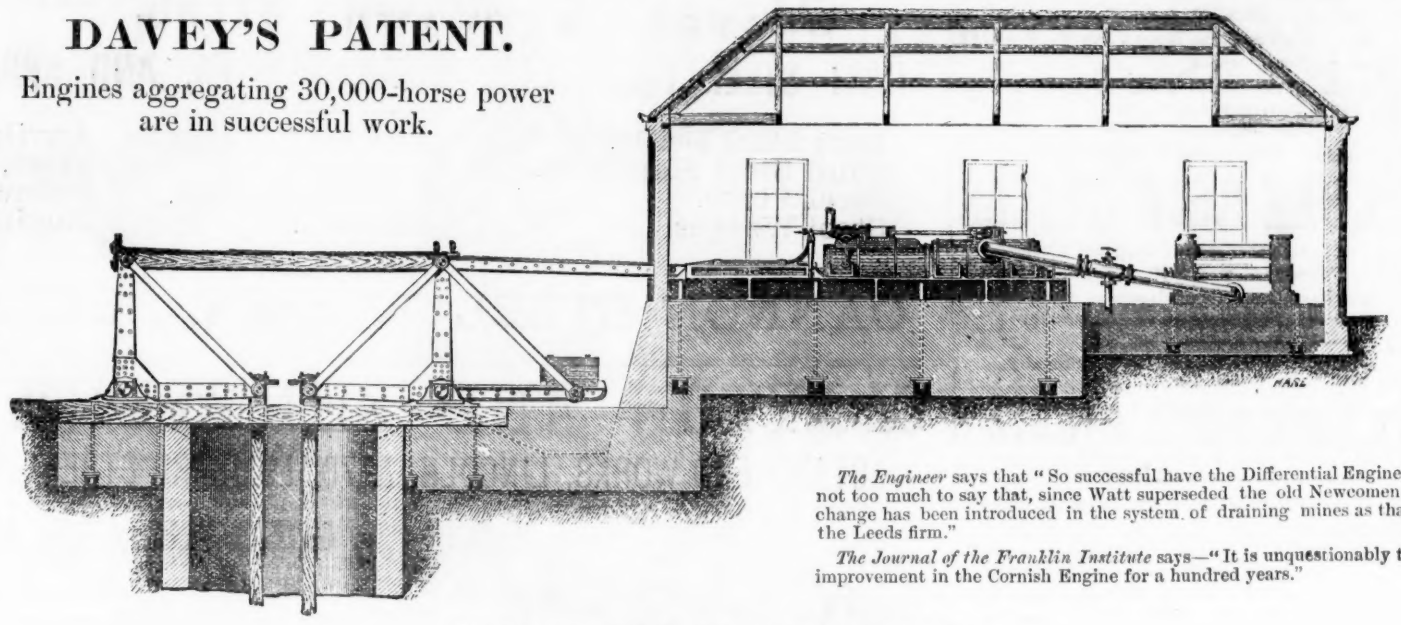

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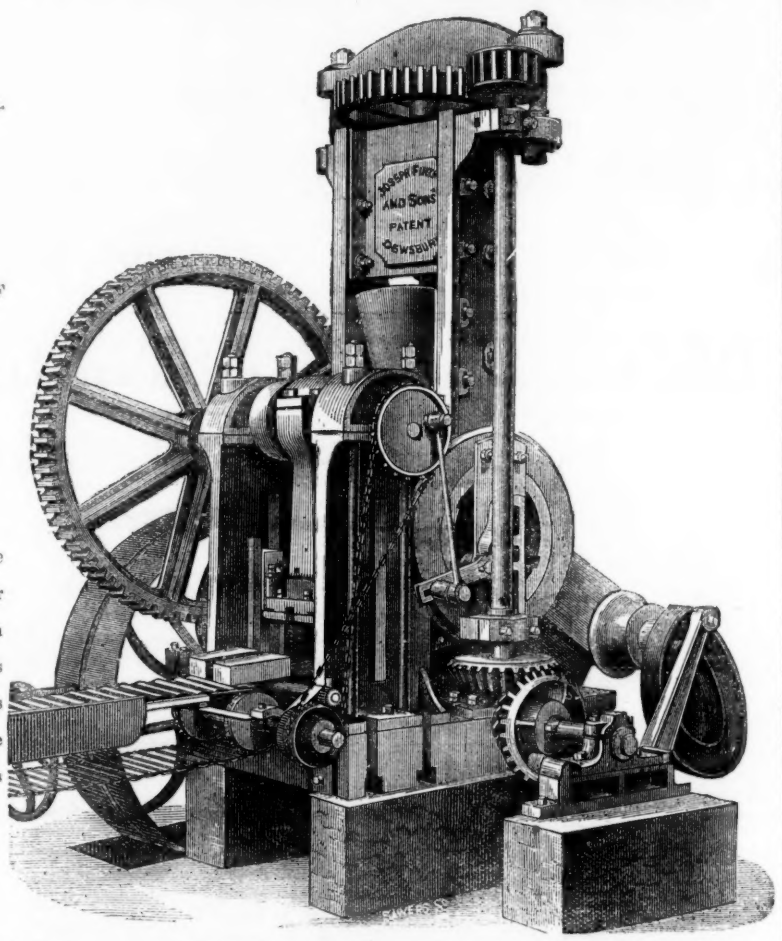

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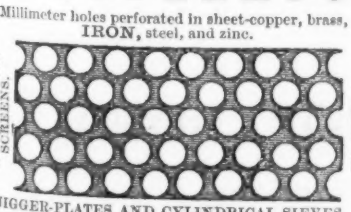

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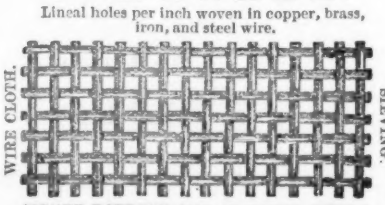

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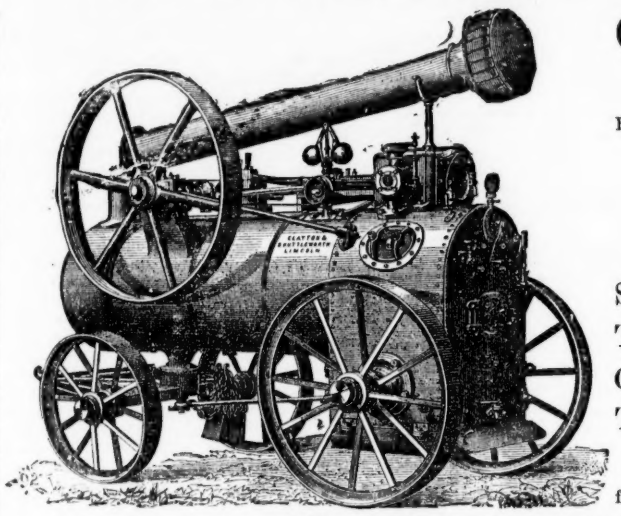

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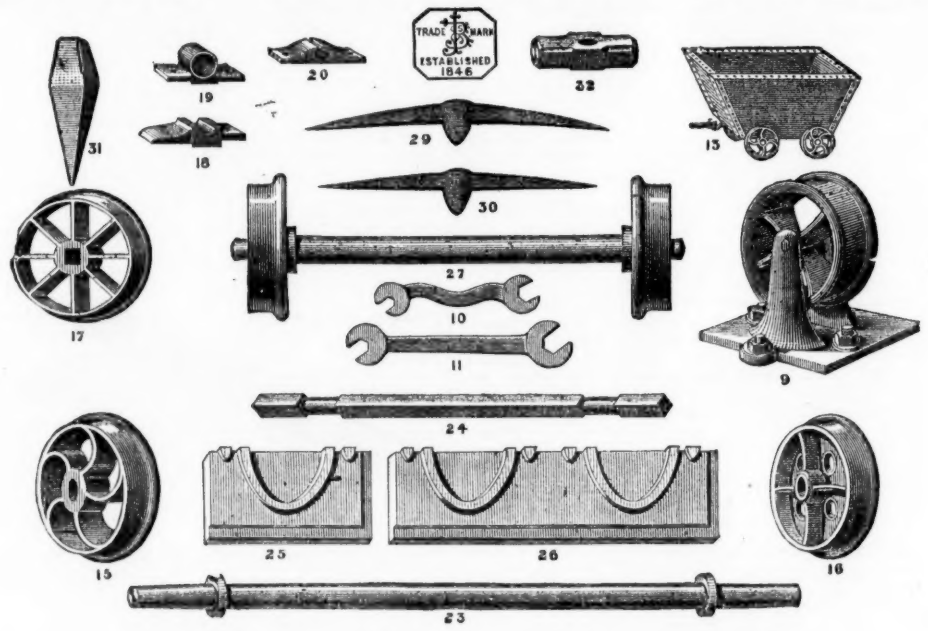

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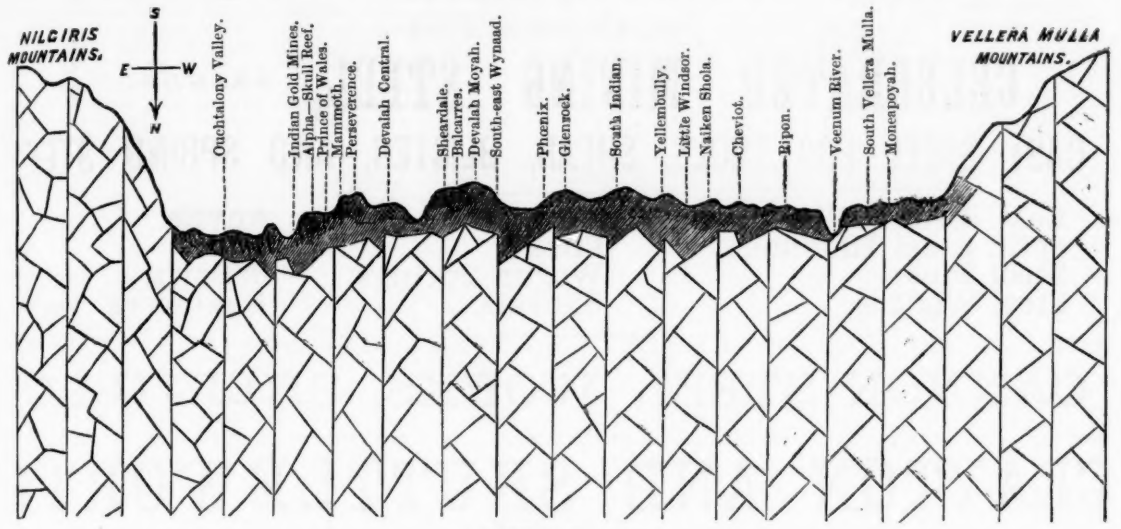
GOLD MNING IN SOUTHERN INDIA.



SECTION No. I.

GOLD MINING IN SOUTHERN INDIA.

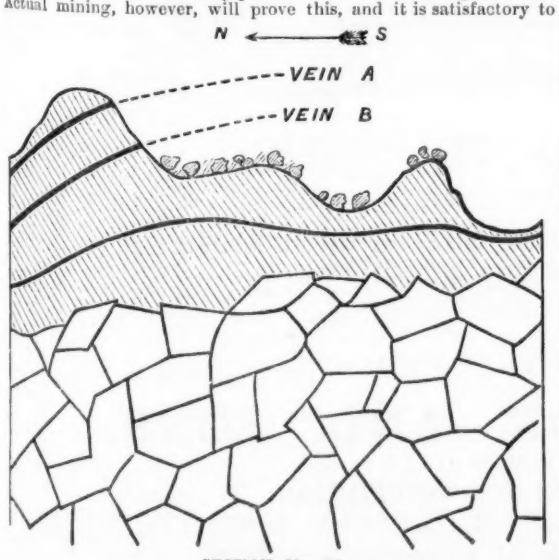
SIR,—Whatever may be the ultimate result of gold mining in the Wynaad there is certainly much that is instructive and interesting in this gold field. Unlike on the discovery of the precious metals in Australia and California, there is not the least appearance of a rush. It may be said to be essentially the capitalist's mining field. There are no working miners, prospectors on the outcrops, with an arrastra going to grind up the prill, or choice pieces, as would have been the case on the discovery of a gold field on the Pacific. Even the mining laws which the Government has enacted, ostensibly to promote a legitimate mining industry, to encourage the coming of that class which did so much to open up Australia and California, must have a contrary effect. To take up Government lands for mining purposes the applicant is permitted to mark off 30 acres as a mining claim, with 100 acres as adjunct, for milling and other purposes, but on the latter only surface rights are granted. The real difficulty is in the quantity of labour to be employed. To retain such right the law says the employment of 5 men per acre, or on the 30 acres 150 hands.

Alluvial and outcrop mining, however, is hardly thought of; it is the working of the many quartz veins all are looking forward to so anxiously for remunerative results. That there is gold here, that it is in the quartz matrix, and that there are large outcrops of quartz, on which the leading mines are located, anyone who had the opportunity of passing over the district can testify. Quartz, however, is very widely distributed in the Wynaad. Gold, it is said, has been found in places at considerable distanoes apart, thus encouraging the expectation that the quartz embraced in an area of 1000 or more square miles may prove sufficiently auriferous to pay. But the principal mines are not widely distributed. They may be said to be embraced in a zone of about 25 miles long and 4 miles wide, or per Fig. 1, they are bounded on the east by the Nilgiris, on the west by the Vellera Mulla mountain range, their relative positions sectionally and within such zone, being as indicated in the above engraving.

There is not much diversity in the geology of the Wynaad goldfield. The country rock is metamorphic—a hard dense gneiss, varying slightly in texture and composition, as may be expected. Intrusive rocks are the exception. In two or three places, notably at Hamsluck Waterfall, there are what appears to be trap-like rocks; but, not unfrequently, the exceptional appearance is, perhaps, due to the varying conditions at work during the original deposition of the sedimentary matter. But, as far as has yet been observed, there are no great faults passing through the district; no upheavals, bringing rocks of opposite composition in juxtaposition; near, and even in such dislocations of strata, the principal metalliferous mines of the United States and England are usually found. In fact, it is questionable if the Wynaad veins can be called true fissure veins. Certainly, they are not similar in general character to the veins usually wrought in the two named countries; but, because it is not like any other district one has been accustomed to, it would be obviously unwise to infer, without trial, it is of less value. The Wynaad district will, perhaps, be found peculiarly unique.

As shown in section, the principal mines are located on or near a hill, which, in nearly all cases where out-crops are exposed, the country rock is completely disintegrated; that which was to all appearance once hard gneiss has become as soft as chalk or clay. Even in this disintegrated rock, when drifted through, the strike and dip of the strata is plainly discernable, though at times it is more confused, and in the drift-side concentric rings may be seen, perhaps implying a land slide, and that boulders had been imbedded in the *debris*. Nor must it be inferred the whole hill has undergone disintegration. In the bed of every stream, and protruding out at various places, the hard gneiss rock may be observed. In the section the shaded portion is intended to show what may probably be found to be disintegrated ground.

The veins not unfrequently slope down with the side of the hill, indeed, sometimes a vein is only a few feet in from the sloping surface of the hill side, and it causes considerable controversy with many, if the veins will really penetrate the hard dense gneiss rock. Actual mining, however, will prove this, and it is satisfactory to know that at least two companies have started deep levels, which, when driven, must prove in their cases if the veins really go to an infinite depth or not. But should the veins fail to penetrate the very hard rock, the small angle which they make with the horizon gives to a mine located on a hill side a large working area. These secondary hills are not unfrequently from 200 to 500 ft. high. Taking a known case, where the hill is 420 ft. vertically, with vein sloping all down the hill-side, at an angle of about 20° to horizon; in such an instance the working value of the vein, above the base of the hill, is 1200 ft., or practically the same as a mine 200 fms. in depth. Indeed, with the leading mines it will not be a question of quartz, but what its auriferous value per ton may be.



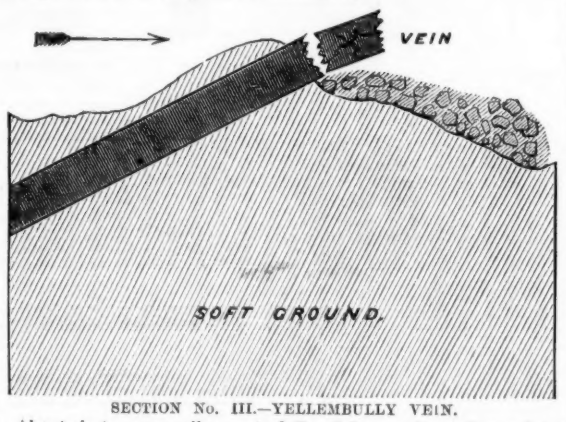
SECTION No. II.

Adverting further to the vein formation, there is certainly much that is puzzling; it is not unfrequent to find huge isolated boulders of auriferous quartz, but no vein *in situ*. In not one instance only, but in several, those experts of "light and leading" have written elaborate reports, defined the dip and strike of the supposed vein, given estimates of possible returns, when the most superficial mining would have proved the supposed out-crops to be simply two or three isolated boulders. But the question arises how those boulders got there? There must be some law regulating what has been so misleading and erratic; any experience which may tend to elucidate the problem can, therefore, not be out of place, especially when we consider the interests in many places at stake. Perhaps a reference to Section No. II. will assist to elucidate what has been observed, and which may be a not improbable cause of their being so situate.

The dip and strike of the veins seem to bear no relation to the dip and strike of the country rock. There is not an uptilting of strata in proximity to the veins, nor are the veins encased between parallel beds of gneiss rock, but rather, so to speak, within foliating fractures, due perhaps to shrinkage and lateral pressure at all angles to the dip, and trailing along on top of the harder rock. In fact, the veins in some places bear a strong analogy to a hard, poor coal seam on the confines of the carboniferous rocks, rolling about in places, as with coal swelling out into large blocks, then, a few feet farther on, represented only by a tiny string of quartz, but in nearly all cases embedded in a soft felspathic sand. Geologically, it is not difficult to conceive the complete erosion of hills, even to forming the great valley between the two ranges of mountains in Section I., so that the quartz being thus liberated, and very hard, have resisted disintegration, and have gravitated to levels and distances some way from their original or *in situ* position; or, per Section II., the prolongation of veins A and B, represented by the dotted lines, have had the encasing softer rock washed away, the quartz being so much more durable, have resisted disintegration, and may be found scattered about at all lower levels, as shown.

An interesting feature are the old native workings. One sees a not dissimilar method to extract the gold to that employed by the ancient miners on the moors and dales of Yorkshire—those old workings which are said to have been wrought centuries ago to extract the lead and silver contained in the veins. Those northern miners, tradition says, worked the hill-side veins by directing large quantities of water to flow down over the outcropping mineral, forming between the hard limestone rocks great groves, sometimes hundreds of feet in length, and fifty, to more, feet in depth; or that they "hushed" the vein matrix out, the old workings being still called hushes.

In the Wynaad the natives seem also to have used the erosive power of water to mine, but the geologic conditions would not permit an identical method to that in the north. Perhaps a section through the Yellembully vein will illustrate.



SECTION No. III.—YELLEMBULLY VEIN.

About six to seven miles west of Devalah are situated very large native workings. As shown in Section III. the vein crops out on the hill top. The appearances indicate the racing of water along the vein from the west—perhaps during the monsoon—and having had small drifts driven in under the vein (some are still to be seen) into the soft sandy ground beneath, a large portion of the up cropping vein would be undermined when turning in the water, and properly directed against the pillars the latter would ultimately wash away, and large masses of quartz would fall down the south hill side, which latter has the appearances of an old burrow, so covered is it with ragged and broken pieces of quartz, stones of considerable weight to small pieces like pebbles, implying the whole to have been carefully examined. Near Devalah, on the Adelphi estate, nearly a similar system has been employed. The vein in the latter case slopes down near the surface in a hollow of the hill side. Here the natives seem also to have cut through the vein in the hollow, made holes through fractures in the vein and turned in water, for their old drifts and little shafts are still to be seen. Their most mining like workings, however, are on what is probably the dip side of this vein, on the north-east side of this hollow over a small hill. It is at this latter point the deep shafts of the native workers are found. An engineer and myself went down one of those 70 ft. deep shafts, ground plan of which at the bottom is as shown in Fig. IV.

The natives seem to have understood the danger of taking out the vein at the shaft bottom. They lift it entire at this point, and drove off in the country ground, then cross-cutted to the vein again. We went into this drift and cross-cut a small distance, but further progress was obstructed by fallen debris.

Another native working which has attracted considerable notice is that of the Skull Reef, and on the extension of which below another

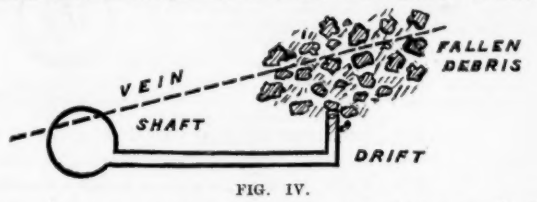
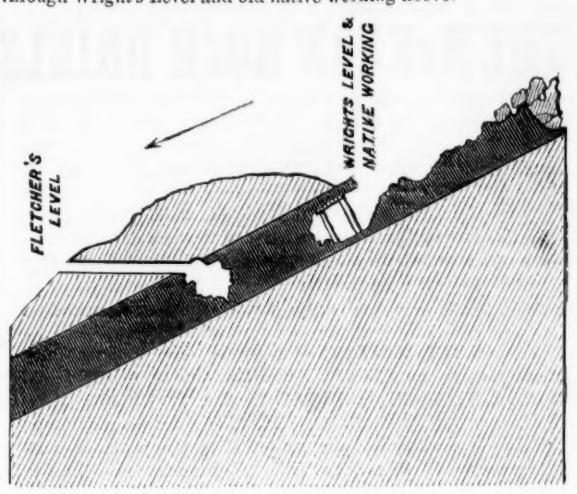


FIG. IV.

o'd working has been driven the often quoted Wright's Level. The vein at these places is 12 to 15 ft. wide, and as the quartz is quite hard the old workings have not wholly collapsed, so that one is able to see the magnitude of their mining operations. Fig. V. is a section through Wright's Level and old native working above.



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C. ROWE.

Devalah, Wynaad, April 20.

INDIAN GOLD MINES, AND THEIR PROSPECTS.

SIR,—Referring to the insinuation that nothing has been done to test the real character of the Indian gold deposits before inviting British capital to develope them, permit me to say with regard to the Mysore mines that before any capital was sought they expended nearly 30,000*l.*; they "probed" the ground, found the reefs, proved them to be true fissure veins, tried the stone on and near the surface, found it auriferous, sank to depths of 70 to 80 ft., and found the stone there to be more auriferous still; then placed before the public no mere assay reports, but statements of infinitely more and different value—facts of gold got from the stone in quantity—from one level in course of sinking 17 tons gave 40½ ozs., from another lot, got at the 10 ft. level, and from immediately under the old workings 9 tons were got up and yielded 27½ ozs.; again—and this time after one of the first companies was formed—stone was taken from the surface, and from the reef all the way down to a 60 ft. depth, when it was considered a start could be made, and 1000 tons were ready to go on with, a commencement was made and 44 tons, taken promiscuously from the heap, were crushed, and from those 44 tons 40 ozs. of gold were got; but the machinery—made in Madras—was found quite inadequate for the work; the stamps gave way, the amalgamator was not in order, and the assays showed that from ½ to ½ oz. of gold per ton was lost, and it was decided to give up work till the best machinery could be sent out and erected. Now, it is also found that the deep sinkings have, *pro tem.*, to be given up, as, on piercing through other strata of rock, the deepest sinking has to do the work of draining for the entire set of reefs—a fact of enormous geological importance—as proof of continuation, compactness, and value of the reefs,

This work was all done at the Mysore land, and the deeper pits sunk and the stone got out at what is now the Ooregum Company's block; on the blocks contiguous—the Mysore and the Colar—three or four large shafts are being sunk; the reefs on all are known to be equally valuable, and on all three pumping and crushing machinery is in course of erection; work has been going on for some time, and crushing will soon be commenced. The company of capitalists did not, of course, confine their operations to one spot, but prospected over many miles of country; and, under arrangement with the Mysore Government, secured concessions of selected land, selecting only land of an ascertained value for gold mining. One great point in the value of the property is, as stated in most of the Colar-Mysore Companies' prospectuses—"The land is at an altitude of 3000 ft., and the Madras and Bangalore Railway runs within four miles of the property."

The above facts regarding the reefs, the work done, &c., are vouched for by men of the highest standing in the service, and out of the service; they are corroborated by firms such as Arbuthnot and Co., of Madras, by men like Colonel Arbuthnot of the 14th Hussars, Sir William Cunningham, V.C., both of whom were very recently in the district of the mines, and went down one of the shafts and saw the reefs with gold *in situ*. Sir William brought home with him a lump he broke off one of the reefs, leaving it, I understand, with Messrs. Taylor and Sons, the mining engineers. Portions also broken off the reefs by General Beresford are now to be seen at the School of Mines, Jermyn-street. I also have seen the reefs; I know they are gold-bearing to over 1 oz. per ton, and am certain that


PARIS, BRONZE MEDAL, 1867.


ORDER OF THE CROWN OF PRUSSIA.


FALMOUTH, SILVER MEDAL, 1867

A DIPLOMA—HIGHEST OF ALL AWARDS—given by the Geographical Congress, Paris, 1875—M. Favre, Contractor, having exhibited the McKean Drill alone as the MODEL BORING MACHINE for the ST. GOTHARD TUNNEL.

SILVER MEDAL of the Highland and West of Scotland Agricultural Society, 1875—HIGHEST AWARD.

At the south end of the St. Gothard Tunnel, where

THE McKEAN ROCK DRILLS

Are exclusively used, the advance made during eight consecutive weeks, ending February 7, was 24·90, 27·60, 24·80, 26·10, 28·30, 27·10, 28·40, 28·70 metres. Total advance of south heading during January was 121·30 metres, or 133 yards.

In a series of comparative trials made at the St. Gothard Tunnel, the McKean Rock Drill continued to work until the pressure was reduced to one-half atmosphere (7½ lbs.), showing almost the entire motive force to be available for the blow against the rock—a result of itself indicating many advantages.

The GREAT WESTERN RAILWAY has adopted these Machines for the SEVERN TUNNEL; the LONDON AND NORTH-WESTERN RAILWAY for the FESTINIOG TUNNEL: and the BRITISH GOVERNMENT for several Public Works. A considerable number of Mining Companies are now using them. Shafts and Galleries are driven at from three to six times the speed of hand labour, according to the size and number of machines employed, and with important saving in cost. The ratio of advantage over hand labour is greatest where the rock is hardest.

These Machines possess many advantages, which give them value unapproached by any other system of Boring Machine.

THE McKEAN ROCK DRILL IS ATTAINING GENERAL USE THROUGHOUT THE WORLD FOR MINING, TUNNELLING, QUARRYING, AND SUB-MARINE BORING.

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LONG LANE, SOUTHWARK LONDON
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THE UNDERSIGNED, having secured the Grants of several VALUABLE MINERAL PROPERTIES (TIN AND COPPER), in the St. Blazey District, in the vicinity of Fowey Consols, &c., is DESIROUS of OBTAINING the CO-OPERATION of CAPITALISTS for their EXPLORATION. There is little or no risk involved in the undertakings, and the capital required in each case is very limited. R. SYMONS
11, Parade, Truro, 3rd February, 1881.

MAP OF CALLINGTON, CALSTOCK, AND TAVISTOCK MINING DISTRICTS.
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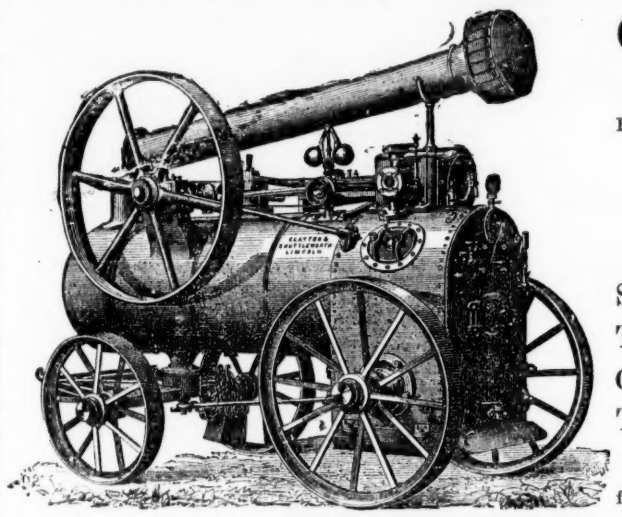

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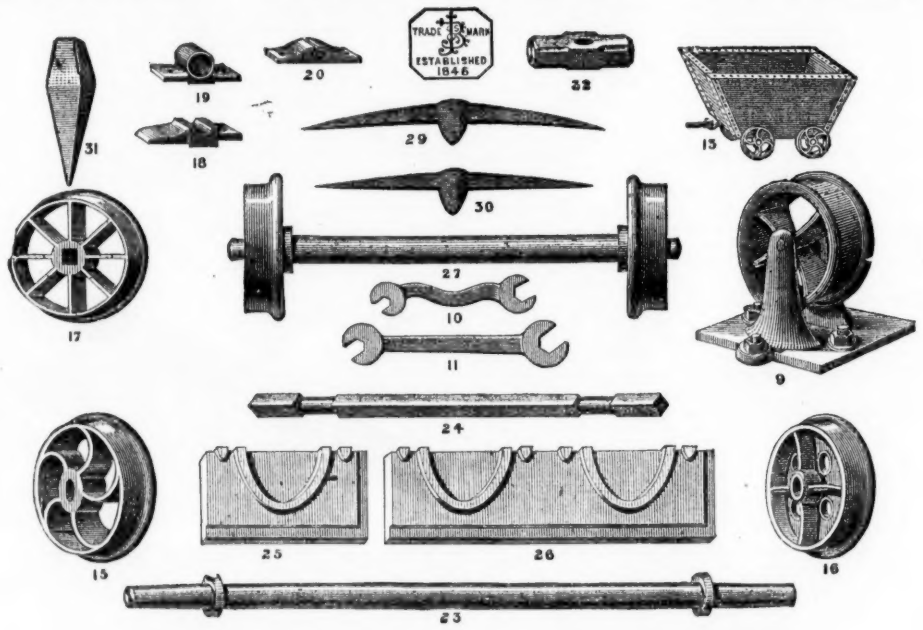

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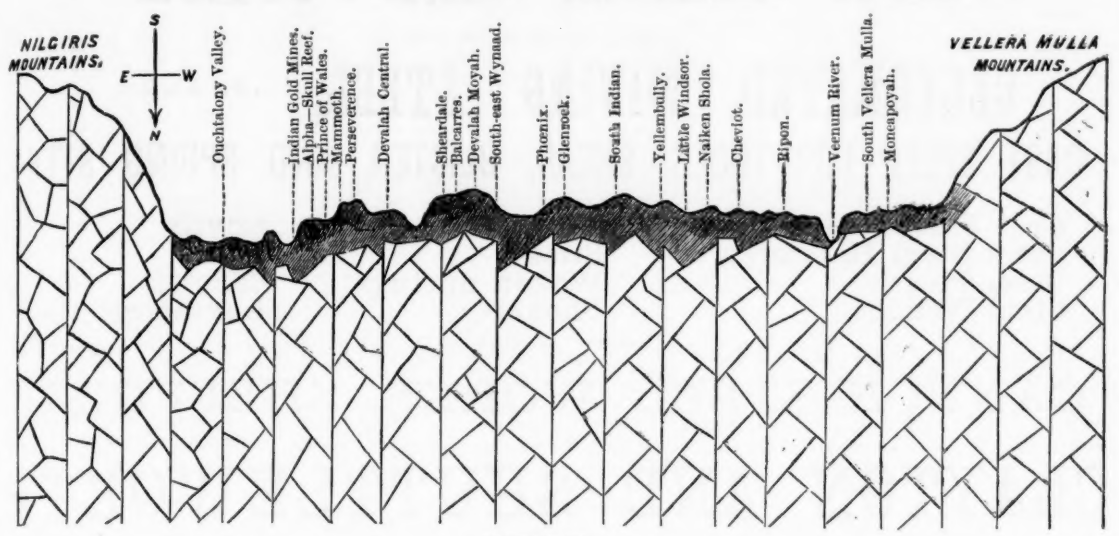
GOLD MNING IN SOUTHERN INDIA.



SECTION No. I.

GOLD MINING IN SOUTHERN INDIA.

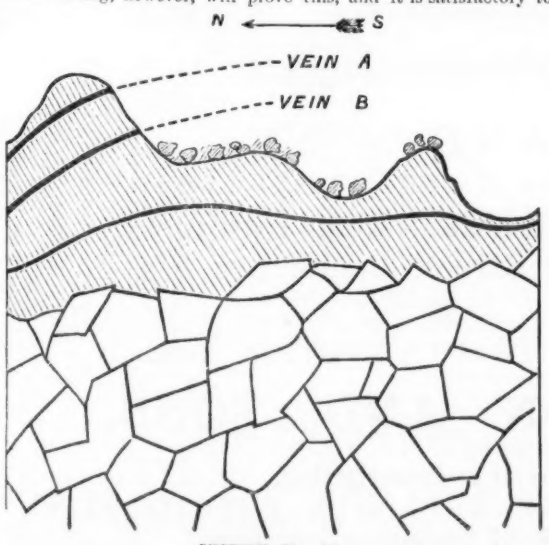
SIR,—Whatever may be the ultimate result of gold mining in the Wynaad there is certainly much that is instructive and interesting in this gold field. Unlike on the discovery of the precious metals in Australia and California, there is not the least appearance of a rush. It may be said to be essentially the capitalist's mining field. There are no working miners, prospectors on the outcrops, with an arrastra going to grind up the prill, or choice pieces, as would have been the case on the discovery of a gold field on the Pacific. Even the mining laws which the Government has enacted, ostensibly to promote a legitimate mining industry, to encourage the coming of that class which did so much to open up Australia and California, must have a contrary effect. To take up Government lands for mining purposes the applicant is permitted to mark off 30 acres as a mining claim, with 100 acres as adjunct, for milling and other purposes, but on the latter only surface rights are granted. The real difficulty is in the quantity of labour to be employed. To retain such right the law says the employment of 5 men per acre, or on the 30 acres 150 hands.

Alluvial and outcrop mining, however, is hardly thought of; it is the working of the many quartz veins all are looking forward to so anxiously for remunerative results. That there is gold here, that it is in the quartz matrix, and that there are large outcrops of quartz, on which the leading mines are located, anyone who had the opportunity of passing over the district can testify. Quartz, however, is very widely distributed in the Wynaad. Gold, it is said, has been found in places at considerable distances apart, thus encouraging the expectation that the quartz embraced in an area of 1000 or more square miles may prove sufficiently auriferous to pay. But the principal mines are not widely distributed. They may be said to be embraced in a zone of about 25 miles long and 4 miles wide, or per Fig. 1, they are bounded on the east by the Nilgiris, on the west by the Vellera Mulla mountain range, their relative positions sectionally and within such zone, being as indicated in the above engraving.

There is not much diversity in the geology of the Wynaad goldfield. The country rock is metamorphic—a hard dense gneiss, varying slightly in texture and composition, as may be expected. Intrusive rocks are the exception. In two or three places, notably at Hamsluck Waterfall, there are what appears to be trap-like rocks; but, not unfrequently, the exceptional appearance is, perhaps, due to the varying conditions at work during the original deposition of the sedimentary matter. But, as far as has yet been observed, there are no great faults passing through the district; no upheavals, bringing rocks of opposite composition in juxtaposition; near, and even in such dislocations of strata, the principal metalliferous mines of the United States and England are usually found. In fact, it is questionable if the Wynaad veins can be called true fissure veins. Certainly, they are not similar in general character to the veins usually wrought in the two named countries; but, because it is not like any other district one has been accustomed to, it would be obviously unwise to infer, without trial, it is of less value. The Wynaad district will, perhaps, be found peculiarly unique.

As shown in section, the principal mines are located on or near a hill, which, in nearly all cases where out-crops are exposed, the country rock is completely disintegrated; that which was to all appearance once hard gneiss has become as soft as chalk or clay. Even in this disintegrated rock, when drifted through, the strike and dip of the strata is plainly discernable, though at times it is more confused, and in the drift-side concentric rings may be seen, perhaps implying a land slide, and that boulders had been imbedded in the *debris*. Nor must it be inferred the whole hill has undergone disintegration. In the bed of every stream, and protruding out at various places, the hard gneiss rock may be observed. In the section the shaded portion is intended to show what may probably be found to be disintegrated ground.

The veins not unfrequently slope down with the side of the hill, indeed, sometimes a vein is only a few feet in from the sloping surface of the hill side, and it causes considerable controversy with many, if the veins will really penetrate the hard dense gneiss rock. Actual mining, however, will prove this, and it is satisfactory to know that at least two companies have started deep levels, which, when driven, must prove in their cases if the veins really go to an infinite depth or not. But should the veins fail to penetrate the very hard rock, the small angle which they make with the horizon gives to a mine located on a hill side a large working area. These secondary hills are not unfrequently from 200 to 500 ft. high. Taking a known case, where the hill is 420 ft. vertically, with vein sloping all down the hill-side, at an angle of about 20° to horizon; in such an instance the working value of the vein, above the base of the hill, is 1200 ft., or practically the same as a mine 200 fms. in depth. Indeed, with the leading mines it will not be a question of quartz, but what its auriferous value per ton may be.



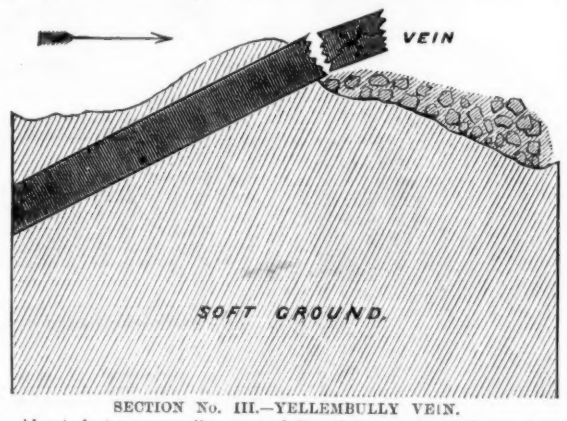
SECTION No. II.

Adverting further to the vein formation, there is certainly much that is puzzling; it is not unfrequent to find huge isolated boulders of auriferous quartz, but no vein *in situ*. In not one instance only, but in several, those experts of "light and leading" have written elaborate reports, defined the dip and strike of the supposed vein, given estimates of possible returns, when the most superficial mining would have proved the supposed out-crops to be simply two or three isolated boulders. But the question arises how those boulders got there? There must be some law regulating what has been so misleading and erratic; any experience which may tend to elucidate the problem can, therefore, not be out of place, especially when we consider the interests in many places at stake. Perhaps a reference to Section No. II. will assist to elucidate what has been observed, and which may be a not improbable cause of their being so situate.

The dip and strike of the veins seem to bear no relation to the dip and strike of the country rock. There is not an uptilting of strata in proximity to the veins, nor are the veins encased between parallel beds of gneiss rock, but rather, so to speak, within foliating fractures, due perhaps to shrinkage and lateral pressure at all angles to the dip, and trailing along on top of the harder rock. In fact, the veins in some places bear a strong analogy to a hard, poor coal seam on the confines of the carboniferous rocks, rolling about in places, as with coal swelling out into large blocks, then, a few feet farther on, represented only by a tiny string of quartz, but in nearly all cases embedded in a soft felspathic sand. Geologically, it is not difficult to conceive the complete erosion of hills, even to forming the great valley between the two ranges of mountains in Section I., so that the quartz being thus liberated, and very hard, have resisted disintegration, and have gravitated to levels and distances some way from their original or *in situ* position; or, per Section II., the prolongation of veins A and B, represented by the dotted lines, have had the encasing softer rock washed away, the quartz being so much more durable, have resisted disintegration, and may be found scattered about at all lower levels, as shown.

An interesting feature are the old native workings. One sees a not dissimilar method to extract the gold to that employed by the ancient miners on the moors and dales of Yorkshire—those old workings which are said to have been wrought centuries ago to extract the lead and silver contained in the veins. Those northern miners, tradition says, worked the hill-side veins by directing large quantities of water to flow down over the outcropping mineral, forming between the hard limestone rocks great groves, sometimes hundreds of feet in length, and fifty, to more, feet in depth; or that they "hushed" the vein matrix out, the old workings being still called hushes.

In the Wynaad the natives seem also to have used the erosive power of water to mine, but the geologic conditions would not permit an identical method to that in the north. Perhaps a section through the Yellembully vein will illustrate.



SECTION No. III.—YELLEMBULLY VEIN.

About six to seven miles west of Devalah are situated very large native workings. As shown in Section III. the vein crops out on the hill top. The appearances indicate the racing of water along the vein from the west—perhaps during the monsoon—and having had small drifts driven in under the vein (some are still to be seen) into the soft sandy ground beneath, a large portion of the up cropping vein would be undermined when turning in the water, and properly directed against the pillars the latter would ultimately wash away, and large masses of quartz would fall down the south hill side, which latter has the appearances of an old burrow, so covered is it with ragged and broken pieces of quartz, stones of considerable weight to small pieces like pebbles, implying the whole to have been carefully examined. Near Devalah, on the Adelphi estate, nearly a similar system has been employed. The vein in the latter case slopes down near the surface in a hollow of the hill side. Here the natives seem also to have cut through the vein in the hollow, made holes through fractures in the vein and turned in water, for their old drifts and little shafts are still to be seen. Their most mining like workings, however, are on what is probably the dip side of this vein, on the north-east side of this hollow over a small hill. It is at this latter point the deep shafts of the native workers are found. An engineer and myself went down one of those 70 ft. deep shafts, ground plan of which at the bottom is as shown in Fig. IV.

The natives seem to have understood the danger of taking out the vein at the shaft bottom. They lift it entire at this point, and drove off in the country ground, then cross-cutted to the vein again. We went into this drift and cross-cut a small distance, but further progress was obstructed by fallen debris.

Another native working which has attracted considerable notice is that of the Skull Reef, and on the extension of which below another

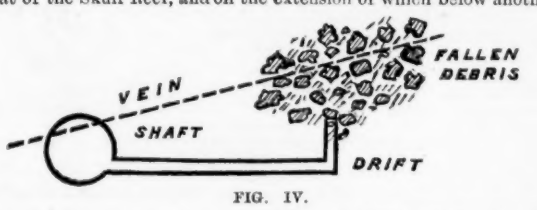


FIG. IV.

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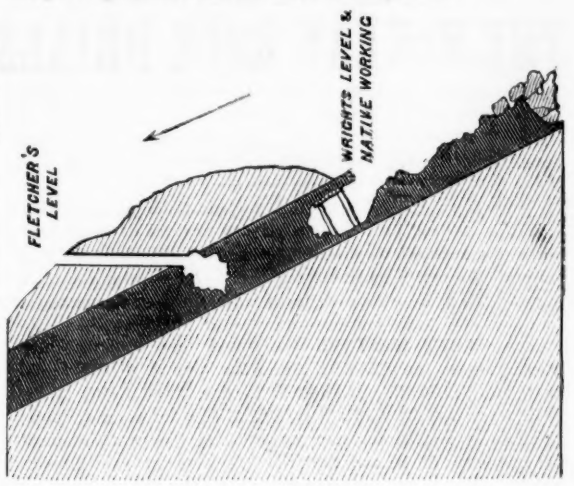

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Devalah, Wynaad, April 20.

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SIR,—Referring to the insinuation that nothing has been done to test the real character of the Indian gold deposits before inviting British capital to develope them, permit me to say with regard to the Mysore mines that before any capital was sought they expended nearly 30,000*l.*; they "probed" the ground, found the reefs, proved them to be true fissure veins, tried the stone on and near the surface, found it auriferous, sank to depths of 70 to 80 ft., and found the stone there to be more auriferous still; then placed before the public no mere assay reports, but statements of infinitely more and different value—facts of gold got from the stone in quantity—from one level in course of sinking 17 tons gave 40½ ozs., from another lot, got at the 10 ft. level, and from immediately under the old workings 9 tons were got up and yielded 27½ ozs.; again—and this time after one of the first companies was formed—stone was taken from the surface, and from the reef all the way down to a 60 ft. depth, when it was considered a start could be made, and 1000 tons were ready to go on with, a commencement was made and 44 tons, taken promiscuously from the heap, were crushed, and from those 44 tons 40 ozs. of gold were got; but the machinery—made in Madras—was found quite inadequate for the work; the stamps gave way, the amalgamator was not in order, and the assays showed that from ½ to ¾ oz. of gold per ton was lost, and it was decided to give up work till the best machinery could be sent out and erected. Now, it is also found that the deep sinkings have, *pro tem.*, to be given up, as, on piercing through other strata of rock, the deepest sinking has to do the work of draining for the entire set of reefs—a fact of enormous geological importance—as proof of continuation, compactness, and value of the reefs.

This work was all done at the Mysore land, and the deeper pits sunk and the stone got out at what is now the Ooregum Company's block; on the blocks contiguous—the Mysore and the Colar—three or four large shafts are being sunk; the reefs on all are known to be equally valuable, and on all three pumping and crushing machinery is in course of erection; work has been going on for some time, and crushing will soon be commenced. The company of capitalists did not, of course, confine their operations to one spot, but prospected over many miles of country; and, under arrangement with the Mysore Government, secured concessions of selected land, selecting only land of an ascertained value for gold mining. One great point in the value of the property is, as stated in most of the Colar-Mysore Companies' prospectuses—"The land is at an altitude of 3000 ft., and the Madras and Bangalore Railway runs within four miles of the property."

The above facts regarding the reefs, the work done, &c., are vouched for by men of the highest standing in the service, and out of the service; they are corroborated by firms such as Arbuthnot and Co., of Madras, by men like Colonel Arbuthnot of the 14th Hussars, Sir William Cunningham, V.C., both of whom were very recently in the district of the mines, and went down one of the shafts and saw the reefs with gold *in situ*. Sir William brought home with him a lump he broke off one of the reefs, leaving it, I understand, with Messrs. Taylor and Sons, the mining engineers. Portions also broken off the reefs by General Beresford are now to be seen at the School of Mines, Jermyn-street. I also have seen the reefs; I know they are gold-bearing to over 1 oz. per ton, and am certain that

under the 80 ft. level they will prove far richer—say from 2 to 5 oz. per ton, and I know the above statements to be facts.

Since I wrote upon the subject, 12 months since, report after report has been made on the gold regions; mining engineers and mining captains have gone out, and with their staffs of miners are busy at work. Intending investors have had reports made to them and for them, and now, week after week, reports are received by the companies now at work on the Mysore land. Every report has but corroborated the statements made in those companies' prospectuses; every report but shows the greater certainty and greather worth and richness of the particular reefs and mines referred to. Rumours have been rife for some little time as to crushing actually begun in the Wynaad. My advices from the district state that no crushing has yet begun, or is likely to be begun for some little time; and, if the originators of the rumours would even content themselves with saying that 2 to 5 oz. per ton have been got, or 2·7 (a probable telegraph error), these rumours would be far nearer probability. I see in the last circular of a well-known broker it is stated "results are hourly expected." They may be, by him—not, I understand, by the companies. There will ever be the element of excitement in the Wynaad, which will, I hope, be ever wanting in those of Mysore, as, from the geological formation and different quartz of the former district, poorer stone and richer will be come upon, whereas the fissure veins of Mysore will give a steady yield, increasing, with depth, in richness, and by degrees doubling and trebling in value. ANGLO-INDIAN.

May 19.

INDIAN GOLD MINING COMPANIES.

SIR,—The very existence of a recently formed company depends, according to its prospectus, and even according to its engineer's report, on the success of the Devignolles process. That process has been pretty well known about for a long time, and was not long since well tested in Glasgow; it was fully commented upon in the *Mining Journal* (particularly in a letter to that Journal of February last), and it is not used by the St. John Del Rey. Further comment is unnecessary. SCRUTATOR.

PARCHERRY GOLD MINING COMPANY.

SIR,—I notice with some surprise the absence of any definite reports on the property of this company, and that first and foremost as usual is the name of Brough Smyth, and that, too, even though the point in his report on the district is that certain gold-bearing reefs run up to Parcherry Hill. Now, as Parcherry Hill, or rather the lower slopes of it, forms one of the boundaries of the land the Parcherry Gold Mining Company are to acquire, the inference from the above quotation may be a doubtful one. The report from Mr. Withers requires careful perusal. The prospectus is full "of most significant inferences," but bare of facts regarding "Holme's application" itself, yet there has been the most ample time for full reports.

London May 16. MINER.

THE CLIMATE OF EAST WASSAW.

SIR,—As the European population of this district is likely largely to increase as mining operations are extended, it may be interesting to some of your readers to learn something of the climate here, differing as it does from places on the seaboard of proximate latitude. The mean temperature of the day, in the shade, is about 78°; that of the night 73°. The highest in the shade 90°; the lowest night temperature 70°. Although there is a dry and wet season here, as on the coast, we seldom experience more than two or three weeks of continuous dry weather, or, on the other hand, of incessant rain without breaks—thus removing the sources of unhealthiness to the European constitution. I am of opinion, from the experience we have already gained since the mines have been opened, and from my general knowledge of the conditions upon which the health of white men depends on the West Coast, that health may be maintained and life enjoyed up here longer than on the seaboard. This applies more particularly to the northern portion of the Tacquah Range, away from the insanitary influence of the populous but squalid town of Tacquah, and of a swamp which lies hard by to the northward.

H. C. CRISWICK, Manager of the Gold Coast Mining Company.

Abboutugakoon, West Africa, April 3.

THE DIAMOND INDUSTRY.

SIR, - Having read with great astonishment an article in a Trade Circular professing to criticise for the guidance of investors the prospectuses of the two Diamond Mining Companies lately brought out in London, but showing such a vast amount of ignorance of the extraordinary resources of the Diamond Mines of South Africa that I think it would be interesting to many of the readers of the *Mining Journal*, and only justice to an industry which has in a comparatively short time made the Cape of Good Hope one of our most important colonies, if you would again refer to these prolific properties, from which since 1871 diamonds to the value of over ten million sterling have been extracted. I will avoid saying anything for or against the companies referred to, being in no way interested as to their success—my object merely being to correct what I consider gross misstatements showing a total want of knowledge of the industry.

Diamonds from South Africa first came to this country in 1870, and in 1871 one of the richest mines of the kind ever known was discovered, and called New Rush, but has since taken the name of the Kimberley Mine. This was the commencement of the dry diggings which have disclosed such vast riches. This mine comprises some 400 claims of 30 square feet, held by many different owners, and, although the writer of the criticism expresses such surprise at the possibility of diamondiferous soil being equally valuable with ground in Fleet-street, or, if he prefers it, Cheapside, I can assure him it is no fiction existing in the heated imagination of the promoters of companies, but a solemn truth that a small spot of ground of the size named has upon the merit of the production it has given risen from a nominal price of 5*l.*, or less, to the present value of 10,000*l.* to 12,000*l.* per claim, at which price they have lately been sold. It is but a short time since that you referred in your valuable Journal to the wonderful stone found by Mr. Rhodes in this mine, who at the request of the Queen proceeded to Windsor that her Majesty might view it, and afterwards it was shown to the Prince and Princess of Wales, at his Royal Higness's request. This gem was part of one day's find, for the half-share in which he was offered 25,000*l.*, but refused it (wisely or not I cannot say), having placed a much higher value upon this wonderful diamond—the finest yet found in South Africa; at the same time in the ordinary daily workings the returns are such that it is no wonder or matter of surprise to those well acquainted with the South African diamond fields that land or soil in the mines should be worth a little more than building land in London; or do buyers expect it priced at so much per acre?

It is far from my wish to advise those having money to take shares in any of the numerous diamond companies in existence, or likely to be formed, for it is wiser for those not thoroughly conversant with the business or industry to abstain from such investments unless very well advised; at the same time, those brought out in Kimberley are certainly *bona fide* undertakings, all being in thorough working order, with machinery of the highest class, and daily making a fair return (which is more than can be said of the numerous gold mines lately so eagerly subscribed for by the confiding public); in fact, the confidence in these companies is such that their shares are quoted as follows, and readily saleable at those prices:—

	Capital.	Shares.	Price.
Companie Française (Diamants du Cap)..	£560,000	£ 20	£ 50
Central Diamond Mining Company	164,000	100	400
British " "	97,500	100	300
Standard " "	225,000	100	230
Rose Innes " "	113,750	25	33
Vulcan " "	82,500	20	24
North-East " "	65,000	100	240

Several others have lately been brought out, and are much sought after. About a mile distant from Kimberley we come to the next most important mine in Griqualand West—De Beers—comprising about 600 claims, but varying very much in value and richness; some portion, such as Baxter's Gully, being equal to any part of Kimberley, and valued at 10,000*l.* per claim. The diamonds found in this mine are different in formation to those of either of the other mines; indeed, it is strange but true that each mine produces a different class of stone; so that, although a parcel comprising the finds from the four mines be sent over to this country, it requires but little difficulty to pick out those found in each mine.

In De Beers the following companies are already in existence, and the shares standing as follows:—

	Capital.	Shares.	Price.
De Beers Mining Company	£200,000	£100 0	£235 0
" " (new).	20,000	10 0	23 10
Baxter's Gully	- -	10 0	25 0
De Beers Central	70,000	2 10 pd.	5 10
Oriental	120,000	2 10	6 0
Schwab's Gully.....	94,000	10 0	20 0

The remaining portion of the claim being worked by various private owners.

Following the main road from De Beers we come to the largest and next most valuable mine, called Du Toits Pan, comprising about 1600 claims; but varying more than any of the other three mines in richness, some ground being hardly worth working, and up to the present day has never paid for doing so, whilst other parts are most productive, giving handsome returns. In this mine many companies have also been formed and the shares quickly taken up, and now selling fairly at high premiums, viz.:—

	Capital.	Shares.	Price.
Central Diamond Mining Co. ...	£100,000	£10 0	£26 0
Du Toits Pan " ...	100,000	10 0	15 0
Globe Diamond " ...	68,000	1 10 pd.	Not known.
Griqualand West " ...	28,000	10 0	13 10
Fry's Gully " ...	125,000	3 10 pd.	5 10
Victoria " ...	45,000	2 0	No price.
Webb's " ...	100,000	10 0	25 0

But a large portion of the claims are still privately worked by various owners most successfully.

A mile from Du Toits Pan, although the settlement joins, is the last of the four mines, being that of Bultfontein, which about five years ago was little more than a deserted spot, having at one time been worked and given up as insufficiently productive to pay any profit; however, with the help of machinery and the energy of a few practical men it is now one of the most successful mines, making more regular returns than either Du Toits Pan or De Beers—that is the diamonds are more equally spread over the 800 claims, and, although the stones produced may not be so highly appreciated as those of the other mines, the profits have been sufficient for the claims to advance from nothing to the present value of 1500*l.* to 2000*l.* per claim of 30 sq. ft., which fact will doubtless disturb the peace of mind of the worthy aforesaid correspondent who cannot reconcile himself to believe it possible that 30 square feet of diamondiferous soil can be of more value than land in the City of London; at the same time I can assure him that some of the sharpest and most practical men of business in this country, holding positions of the highest order, whose names alone would stamp any undertaking as genuine, are very large holders of shares in the companies of this mine, not for speculation but as an investment likely to improve much in value.

The shares of the following companies are quoted on the Kimberley Share Exchange as follows:—

	Capital.	Shares.	Price.
Central Diamond Co., Bultfontein..	£72,500	£10 0	£ 12 0
Alliance " " ...	50,000	7 10 pd.	Par.
Bultfontein Colonial Diamond Co...	70,000	10 0	12 10
Bultfontein Homestead Company...	35,000	2 0 pd.	11 15
Equitable Diamond Company	20,000	10 0	12 0
Excelsior "	28,000	10 0	Par.
French and D'Esterre Company ...	140,600	2 10 pd.	3 10
Union Diamond Company	40,000	1000 0	1020 0
Spes Bona	31,500	10 0	11 0

And various others have since been formed, and every penny of the capital eagerly subscribed for without the necessity of coming to England.

It is somewhat true that Cape diamonds were not so highly thought of when the mines were first discovered, mostly being slightly tinted or off colour, and others yellow; but of late the colour has vastly improved, and the finer qualities are equal to Brazilian or diamonds from any other part of the world. A peculiarity with the Cape mines is that the deeper they are worked (Kimberley being over 300 ft. deep) the finer and richer are the deposits—at least it has proved so with the one worked so deep, and there is every prospect of the three other mines being equally so. In conclusion, I will merely add that since the discovery of the Cape mines Bahia and Rio diamonds have gradually become more difficult of sale, and the proportion now received is not one parcel of Brazilian to 50 parcels of Cape, and the latter would more likely be sold before the single one was disposed of.—*Ely-place, May* 18. VERITAS.

GOLD MINING ASSOCIATION OF CANADA

SIR,—According to promise I send you my notes of what transpired at the statutory meeting of this company held at the Cannon-street Hotel on Thursday, May 12. In the first place the enclosed correspondence [for which we have no space] had passed prior to the meeting of the secretary of the company and myself, and it was upon such correspondence that my questions to the directors were based. Mr. Essex E. Digby Boycott having been voted to the chair, said that the attention of the directors had been called to some letters which had been sent to the secretary by certain shareholders, who had asked whether the directors intended to answer an anonymous communication which appeared in the *Mining Journal* of April 30. He had to inform the meeting that in the opinion of himself and his brother directors it was unnecessary, inasmuch as the allegations were not founded on fact, and, to put it mildly, were untrue, as the meeting would doubtless admit on hearing certain correspondence read bearing upon this point, and which he (the Chairman) now called upon the secretary to read.

The secretary thereupon read the correspondence.

The Chairman continued: That Mr. Stewart, whose remarks were quoted in the letter in the *Mining Journal* of April 30, and the present managing director of this company, Mr. A. A. Humphry, had together been associated with the working of the property belonging to the Gold Mining Company of New York, and that Mr. Stewart had foolishly made certain statements against Mr. Humphry which could not be verified or sustained, and for which he (Mr. Stewart) had expressed contrition. That it was upon considering these facts that the directors of this company had not thought it worth while to throw away time in refuting unsupported statements of an anonymous contributor to a newspaper, which no doubt had inserted such communication without due weight being given to the same.

I thereupon rose and prefaced my enquiry by remarking that I was one of the shareholders who had written on the question of the letter of "Justice" which appeared in the *Mining Journal* of April 30, although I was not, I had discovered since being in the room, the only one who had written the secretary thereupon. That as the allegations contained in the anonymous communication were of a very serious nature, I had written the secretary certain letters (which are referred to above) asking for information, and that as I was not satisfied with the answers to my letters, I now purposed to ask questions on one or two matters referred to in such letters, and that to save time I would ask

Firstly.—That copies of all documents just read by the secretary should be printed and circulated amongst the shareholders, likewise that in future all reports from time to time received from the managing director should also be communicated to the shareholders in a similar way. To this the directors consented.

Secondly.—What was the date of the retirement of the Duke of Montrose as Chairman of the company, and the reason, and also upon what date did the Earl of Denbigh consent to, and did assume the presidency of the company? To this the Chairman replied that he could not give the exact dates, but that the Duke of Montrose did not retire from the Chairmanship until after the allotment of shares.

Thirdly.—How was the company off for funds to work the property, as I noticed that the total share capital was 250,000*l.*, in shares of 1*l.* each, out of which it was proposed to issue only 150,000*l.*, and which it appeared had been thus dealt with—80,000 fully paid shares were allotted to vendors, 33,230 fully paid shares subscribed for=113,230, leaving 36,770, or more than half of the capital proposed to be raised, unsubscribed. That out of the sum of 33,230*l.* subscribed by the directors and the public a sum of 15,000*l.* had been paid to the vendors in cash, leaving what appeared to me a small sum (bearing in mind the estimates for machinery, &c., as set forth in the prospectus, and amounting to 25,000*l.*) of 18,230*l.* to pay all expenses of offices, staff, and the general working expenditure of the company. What was going to be worked? The gravel or "black sand," which, by the way, was to return "immediate profits," according to the prospectus, or the quartz, and what were the estimated profits on the work to be performed in the discretion of the directors. To the above the Chairman replied that, although the amount seemed small, yet the directors had been advised by the managing director that a sum of 35,000*l.* would be ample to ensure the completion of the purchase, and to provide for the proper working of the gold that was on the company's property. That although 33,230 shares had only been subscribed for, yet that some 1500 or 1600 more would be allotted to make up the 35,000*l.*, at which amount the directors had resolved to close the list. That having thorough confidence in their managing director the board were willing to accept all responsibility, and were fully impressed with the statement from Mr. Humphry, that he hoped in reasonable time to earn sufficient to pay a dividend that would be satisfactory to all concerned. That Mr. Humphry, the managing director, had estimated the following amounts as sufficient for the current year's operations—Hydraulic machinery, 4000*l.*; quartz ditto, 3000*l.*; and labour 1000*l.*; or together 8000*l.*; and upon this basis there were funds in hand sufficient for two years' operations.

Fourthly.—What amount of "black sand" was submitted for analysis—as if, say, 10 or 20 lbs. weight were submitted (and which, by the way, might have been selected) for the purpose of analysis, and the results obtained therefrom multiplied so as to give results to 2240 lbs., then it was not a fair way of sampling? To this the Chairman answered: That he could not give the amount of "black sand" sent for analysis. The Hon. J. B. Roche (a director) could not state the amount sent for analysis, but he knew, as a fact, that what "sand" was sent was a fair sample.

Fifthly.—What number of shares was subscribed for privately, as set forth in the heading of the prospectus, and how many were allotted to the public after the issue of the prospectus? [At this stage of the proceedings the Earl of Denbigh took his seat at the board.] To this the Chairman replied: That, as stated by the secretary to Mr. Higgins, the total subscribed at present was 33,230*l.* That out of this sum about 26,000*l.* had been actually subscribed by the directors and their friends before issuing the prospectus, and that, as would be seen, the small proportion of 7000*l.* had been taken up by the public. That he could assure the shareholders the directors were conscientiously of opinion that the amount subscribed would be ample, and would enable them to declare a dividend at about the end of the year.

The Earl of Denbigh here remarked that he believed the shareholders would be satisfied with the results that would be obtained after the lapse of a reasonable time. In reply to a question from myself as to whether he had seen or been over the property, his lordship remarked that he had not. Thereupon the Hon. J. B. Roche mentioned that he had been out on the property for about two years, and he could assure the shareholders that he believed the statements set forth in the prospectus would be verified. In answer to a further question from another shareholder this gentleman also replied that the company's property had not been worked in any part previously by Mr. Stewart or anyone else. The solicitor to the company also backed up these remarks, and referred to the fact that the directors had resolved to close the list in any event at 35,000*l.*, as in their opinion that amount would be sufficient to develope the property, judging from the statement of the managing director, upon whom they thoroughly relied and in whom they had perfect confidence. A shareholder here arose and deprecated the allotment of shares by the directors in the face of so small a subscription by the public, but he was again assured that the board were fully of opinion that the amount available for working capital (about 18,000*l.*) would be ample to carry on remunerative operations. Another shareholder also rose, and created some amusement by asking whether, as the directors considered this being such a good thing, the directors would not relieve the public of their shares considering the small number allotted. Another shareholder asked that in the event of the success of the company would the directors offer the remaining shares to the present shareholders in preference to the public, and the Chairman replied in the affirmative.

Sixthly.—Of course no quotation can be asked of the Stock Exchange Committee? To this the Chairman responded in the negative.

Seventhly.—What is the financial status of the Capital Guarantee Society, whereby the ultimate return of the amount paid for shares is guaranteed? And while upon this I would ask the directors a further question. I have searched the Directories for this and last year, but fail to trace the name of any such company. In looking, however, through the Stock Exchange Year Book for this Year (1881) I come across the General Expenditure Assurance Company (Limited), and the managing director is, I find, Mr. T. B. Edwardes. Will the directors inform me if this is the Capital Guarantee Society, and further, whether the Mr. Edwardes above referred to, and the director of this company of that name, are one and the same person? To this the Chairman replied that the Capital Guarantee Society and the General Expenditure Assurance Company was one and the same concern, and that Mr. Edwardes was one and the same person. That the General Expenditure Assurance Company had been in existence and carrying on business for several years, and that the directors in their discretion had thought fit to enter into arrangements with the company for the issue of bonds. That the way in which the amount was assured to be repaid was that a sum of 5 per cent. would be taken from the share capital subscribed, and invested in the names of trustees for the benefit of the subscribers to the Gold Mining Association of Canada, and this sum, after a lapse of years and accumulation of interest, would arrive at the amount guaranteed. A shareholder here remarked, amidst laughter, that this might happen in about 65 years. Another shareholder deprecated the investment of a sum in any such way; it would be far better to have kept the amount for possible contingent working expenses. The Chairman, replying to these latter remarks, said that he could only assure the meeting that the board of directors had endeavoured to carry out the terms of the prospectus, and that he was confident of the satisfactory results that awaited them.

Nothing more offering for discussion I felt, from the open manner in which the directors had met the shareholders, and the exposition they had given of the company's affairs, that I could not refrain from moving a vote of thanks for the same, which was seconded by another shareholder, who remarked that he had entered the room prepared to listen to the worst state of things, but was glad to take his departure in much better frame of mind. The resolution was put and carried without a dissentient voice being raised, and the Chairman having returned thanks for himself and brother directors, the proceedings terminated.

I believe, Sir, the whole of the foregoing to be a faithful record of what transpired, and court a verification of this belief from any of my brother shareholders who were present. H. W. HIGGINS.

Windsor Road, Holloway, May 19.

SAN PEDRO (CHILI) MINING COMPANY

SIR,—I beg space to correct what appears to be an injustice to the secretary of this company, contained in a letter inserted in the Journal of May 7, in which I complained of not having received a certain printed circular that had been forwarded to shareholders. I have now reason to believe that it was duly forwarded to the address in the share registry of the company, and my not having received it was consequently no fault of the office. I notice a letter in the Journal of last week by a writer who, under shelter of a letter "P," endeavours to wield a weapon palpably too much for him, and who, with conscious inability to do what he desires, resorts to mild abuse, charging me first with "fatuous ignorance," and last with "wilful ignorance," but who wisely forbears from any attempt at proving his ground for these sapient conclusions. If "P." should be open to benefit by a sound bit of advice on letter writing in future, I tender

him the following as eminently suited to his case—always read a letter before attempting a reply. If he will turn to the Journal of May 7 he will find that the statement is perfectly clear, that I was a shareholder in the old company, and, therefore, the uncertainty in which he indulges on this head is gratuitous, and leaves a strong impression on my mind that being fired by a noble ambition to defend the "powers that be" he rushed precipitately upon an imagined aggressor without sufficient consideration. The complaint made was as to the "pace assumed by our leaders," and no amount of argument, mild abuse, or personality can alter the fact that progress has been slow, very slow. I am indebted to a long and courteous letter from the secretary of San Pedro for the reasons of the delay that has taken place, and so far I am satisfied. "P." boldly asserts that no result can be looked for until the San Pedro shaft is retimbered and water out, and that it was my duty to know this; my reply is simple, that no more profound display of his absolute ignorance of the property could possibly have been made, inasmuch as it is quite possible that magnificent returns may be made without either the retimbering of the San Pedro shaft or touching the San Pedro Mine at all. I have no reason to doubt that we have able men as directors, and competent managers on the other side, and sincerely trust results will prove that the ability on one side and competence on the other will lead to the grand success desired; meantime any individual efforts or suggestions, emanating from whence they may, should be encouraged, but also judicially sifted, for of all ignorance that which assumes the garb of knowledge without doubt is pernicious to others as misleading them, and no man can boast of having so much knowledge that it shall be impossible for anybody to tell him that of which he was not before ignorant. With these very mild remarks I withdraw any seeming imputation of neglect by the management of San Pedro (Chili), for I am aware that difficulties have been encountered, and are now being overcome. ARTHUR WEARE.

Arcachon, May 17.

COLORADO UNITED MINES.

SIR,—To weary shareholders (and they must be many) whose patience is well nigh exhausted by the many promises of an early dividend I would suggest the perusal of the manager's letter of Feb. 6. Herein he states plainly, "My object is to steadily increase the reserve ground until I have enough to last at least two years ahead of future development, also that when the 10th and 11th levels are driven and stopes blocked out from the 9th level the output of the mine will exceed that of any prior yield, and highly gratify the stockholders." The mine is entirely free from debt, and, doubtless, well developed for the immediate future, but it would be a relief to many if our hon. manager would let us on this side know the extent of reserves that his prudent management has brought about, for with the shares standing at 60 per cent. I can scarcely reconcile myself to the belief in large reserves. Perhaps some correspondent can afford a reason to— —— AN OLD STOCKHOLDER.

GOLD MINING AND THE GOLD SUPPLY.

SIR,—It is most desirable to know if the rage for gold mining has a "want" to make it genuine, or is it merely speculative? the cause is easily explained, for there is a gold famine. During the last 16 years (1864 to 1879) the average annual value of gold imported into this country, as well as the maximum and minimum, were as follows:—

Average of 16 years	£18,468,092
In 1866, maximum	23,509,641
„ 1879, minimum.....	13,368,675

showing that the supply of gold is more than six millions behind the average and more than 10 millions short of what it was 14 years ago. We must, therefore, come to the conclusion that there is a real gold famine, and we may rest assured the law of supply and demand will meet it.

Some people seem to imagine that the gold of the world has been already got, and that there is not much left, but it is quite otherwise, for the solid world is hardly yet scratched for gold; we may be certain that the rocks contain untold wealth, even if the hitherto unworked "placers" do not. Granite contains gold just as it does the silica forming quartz rocks, though it does not appear until after the granite has been decomposed and reformed into such other rocks as are called metamorphic, Cambrian, and Silurian. It follows, then, that the gold of the solid world cannot be used up until the world itself is used up, an occurrence which need not trouble us. Now although I may have a good deal more to say about "quartz or vein" mining on another occasion I wish to convey at once a general idea of gold mining, and in order to do so will pass on to "placer" mining. Everyone knows how time wears away the rocks, and that the debris is washed to lower levels, the heaviest material depositing first, and the lighter passing on. As the specific gravity of gold is 19·3, and of the debris 2·1, the former soon falls, freed from rubbish, which passes on seaward.

All streams running over auriferous rocks must have gold in their deposits of gravel, sand, clay, and other earthy matter, the accumulations from which are technically called "shallow placers." In a similar way in ages long past accumulations were made which have since become overlaid by sedimentary and volcanic rocks; these deposits are frequently at considerable depth from the surface, and are styled "deep placers"—in both cases the stuff deposited is called "pay dirt." Now, as to the proportion of gold in the ores of different countries or localities probably the best authority on gold mining is Mr. J. Arthur Phillips, M.E., and from his works on the subject I will select two instances—Australia and Hungary. In Victoria there is in 100 parts—gold, 99·25; silver, ·65; whilst in Hungary and Transylvania the proportions are—gold, 60·49; silver, 38·74; copper, ·77 =100·00; and in reference to the latter, he says the mines "generally yield ores of such low produce as only to admit of being advantageously worked under the united conditions of cheap labour and the application of great mining and metallurgical skill."

It is interesting to observe by a recent report from Victoria that in three months 23,000 men obtained 77,000 ozs. of gold by "placer" mining, while 15,600 men got 152,000 ozs. by "vein" mining, and that during that short time 33,716*l.* were paid away as dividends. The mines in Hungary and Transylvania have been worked for more than a thousand years, but I have no evidence as to results, while the current belief is unfavaourable to profit. J. D. SHAKESPEAR.

Great George-street, May 18.

THE CURRENCY QUESTION—BI-METALLISM.

SIR,—In the Journal of March 7 I find a letter dated April 28 upon Gold and Silver, having a real and an artificial value and the consequences thereof. Will you permit me to offer a few remarks in reply. Your correspondent is quite correct in stating gold and silver have a real and an artificial value, but if they are made standards of value, or either of them, the so-called artificial money value, or value by law, becomes coincident with the real or barter value, for the latter altogether ceases to exist if the metal in question is being used as money by Act of Parliament or by law. If two sovereigns are turned into a teaspoon the latter will always possess, so long as its weight remains unaltered, a gold value of two sovereigns. It may be worth more on account of the labour or art applied to it, but it will not be worth less. It is the law which determines this value, and if this be admitted the same rule will hold good as regards silver, and necessarily—for the law is omnipotent in this respect—as regards the relation of value fixed between the two metals. The cost of production does not enter into the question of money value. If mines become very rich of metal they will be worked with profit, if not they will be worked so long as they yield a profit, or abandoned if the money value of the produce falls below the cost of production.

Now, as regards the usefulness of gold and silver as money metal they are obviously on a par, for they are equally durable, portable, and were equally acceptable everywhere until 1873. Some nations give, owing to artificial legislature, as for instance England, a preference to gold, others to silver, but in the course of general commerce it is never asked which metal does serve as the representative of the pound, the franc, the mark. The onus of transportation and keeping chiefly rests with the banks. What difference then does it make or did it make upon the credit of France, for instance, before 1873, whether the reserve in the Bank of France at one time consisted of a larger proportion of silver than of gold, or *vice versa?* The question which carries more weight is, at what period did the general commerce prosper most? During the period of 1853-1870, when silver circulated freely at 15½.—1. At which it could be exchanged for gold at any time at the French Mint, or since 1873 when free mintage in France was suspended and the scramble for gold was inaugurated. Your correspondent says bi-metallism is aiming at the loss of creditors. But who are the debtors? Is it not emphatically the labouring class, masters as well as men, who are dependent upon their earnings and savings, but who cannot save because slackness of trade and low prices, continually tending downwards, cut off their earnings and drive them to despair. It may be that the holders of Government bonds, debentures, &c., may find it in their interest to maintain a state of things which, by reducing the quantity of artificial money gives all the more value to money power, but it appears to me, if I only look at the writings of Englishmen, from Locke and Newton up to the eminent writers of to-day, that England has done a step in the wrong direction, when she established the single gold-standard in 1876, and that the present disturbance of trade, chiefly caused by other nations having followed her example, will bring disaster upon herself by ruining others who until now were her best customers.

If England in 1876 had adopted the French system of bi-metallisms, there would not even have occurred during the subsequent period until 1873 those slight fluctuations in the relative value of gold and silver at the London market which were the consequence or compensation of cost of transport, assurance, and commission between London and Paris. Neither would the series of panics which since 1876 has been almost of regular occurrence in England been of so acute a character, nor would any nation have thought of re-introducing protection, and the Paris Conference of to-day would have been unnecessary, for England would rule omnipotent everywhere. She would be prosperous on account of the prosperity of her customers, and nobody would think of the scarcity of money.

Herne in Westphalia, May 10. E. KOCH.

STORAGE OF ELECTRIC FORCE.

SIR,—Permit me to record the accomplishment of a fact unparalleled in the annals of modern science. A short time ago the able Paris correspondent of the Times announced the discovery by M. Camille Faure of the practical means of storing electric energy and rendering it portable, so as to be applied to many purposes hitherto considered, if not impossible, extremely difficult. The public *séance* at the Société d'Encouragement pour d'Industrie, which was presided over by the *doyen* of the French Acamedy of Science, Mr. J. B. Dumas, and at which were present some of our eminent English scientists, proved that M. Faure's discovery was no mere laboratory experiment, but substantially one of great practically utility. I was myself one of the many sceptics, and would not on mere heresay believe such statements as were published in the Paris Press. But conviction came by personal verification, and the crowning point of all has just been attained. It is this I wish to record. On Monday last, in Paris, a Faure battery, or *pile secondaire*, was charged with the electric fluid direct from the ordinary Grove battery, and in my presence. It may be more economically done from a Gramme or Siemens machine. The receptacle consisted of four Faure batteries, each about 5 in. diameter, and 10 in. high, forming a cylindrical leaden vessel, and containing alternate sheets of metallic lead minium wrapped in felt, and rolled into a spiral wetted with accidulated water, and the whole placed in a square wooden box, measuring about 1 cubic foot, and weighing some 75 lbs. This was protected by a loose wooden cover, through which the electrodes (in lead) protruded, and were flattened down for convenience of transport. This box of "electric energy" was handed to me by M. Faure, at my request, with the object of submitting it for examination and measurement to our eminent electrician, Sir William Thomson, F.R.S., at the University of Glasgow. I had the box by me all through the journey from Paris on Tuesday night, including a five hours' delay at Calais. I arrived at Charing Cross at 11 a.m. on Wednesday, after running the gauntlet of customs and police authorities, who suspiciously looked askance, and seemed to doubt my statement that my box only held "condensed lightning," and contained no infernal machine or new explosive destined to illustrate some diabolical socialistic tragedy. From time to time on the journey I tested the force of the discharge and found it to have well maintained its energy. From London to Glasgow required only another 10 hours, and finally, in about 72 hours from the time of charging in Paris, I had the satisfaction of presenting to Sir William Thomson M. Faure's rare offering of a "box of electricity," intact and potent, holding by measurement within that small space of one cubic foot a power equivalent to nearly one million of foot pounds! This wonderful box is now deposited in the laboratory of the Glasgow University, under the vigilant eye of its director, and being submitted to a series of tests and measurements, the results of some of which made Sir William exclaim, "Why, it's a little witch." I must not, however, trespass on Sir William's ground as to the scientific results, which doubtless he himself will give to the public through the proper channels. But I must generally say that the advantages to science and humanity at large which this discovery (or rather perfection of Mr. G. Plante's discovery) is destined to afford are of such transcendent importance that we cannot for the present form any correct estimate of their magnitude. In short, I have only to add that its future seems as certain as its stored force is potential and as brilliant as its own bright light. But, whatever may be the practical results obtained, I have the satisfaction of recording that for the first time to my knowledge in the history of the universe has a box of electric energy nearly equivalent to a million of foot pounds contained within less than a cubic foot of space, intact and potential, been transported from France or elsewhere to Great Britain.

OLD OR THE GREAT WHEAL VOR.

SIR,—Now that the future looks bright for tin mining, and seeing that several mines are being set to work in Cornwall, I would like to call attention to the once most productive and richest tin mine in this county. The richness of Old Wheal Vor lode may be imagined when it is stated that some of the levels were driven by the miners for 1s. in 1*l.* of the produce, and, I believe, at one level for 4d. in 1*l.* tribute. In former days the works conducted here was a grand sight to see, with such immense quantities of mineral coming to surface and smelted on the spot, and the large number of hands busily employed thereon; but what I wish more particularly to state is that what has been may be again, and in this mining property there seems to be no doubt about it, by working the old lodes, east of Creases, to the cross-course in the unwrought ground. The tin in the old mine all inclines east, and this eastern ground has been looked upon for many years as containing a great store of tin. The adit level alone has been driven through it, which is about 200 fms. in length, and the lode above the adit has been most extensively wrought, which, going below, is about 6 ft. wide, and quite as rich as any lode in the district at the same depth; and it is surprising to those acquainted that it is not at work ere this, as everything connected points in this direction to a great source of wealth. The Wheal Metal is adjoining and parallel with this new ground, the richness of which is well known; and Wheal Metal cross-course, which produced all the riches there, also intersects Old Wheal Vor lodes in the ground referred to. The same cross-course produced the tin in Great Wheal Fortune, where that company raised 70 tons of tin per month, and there is no doubt, under precisely the same circumstances, equal results will be found here; in fact, the tin has already been discovered in the adit level. And as a proof that rich mines are found, as a rule, under the circumstances before named, the late Captain John Davey discovered 15 valuable mines on lodes in parallel ground, and in connection with cross-courses which had produced good results in adjoining mines. This valuable property is held in high estimation by every miner acquainted with it in the neighbourhood, and say it is worth all the rest of the mines in the locality, and have long been hoping for the day when the hidden treasures herein contained shall be brought to light, and the famous old mine once again assume its former life and prosperity. This mine may be speedily brought into operation, as there is a perpendicular engine-shaft to the 144 fm. level already sunk, which will command the eastern ground, and one good engine would drain the whole works to this depth, an advantage in saving of years in time in sinking; and in the present day, with boring machinery for dispatch, double the quantity of ground may be opened in the same space of time, and, consequently, a corresponding increase of returns. I sincerely hope to see some good company make a start with this splendid undertaking, which contains, there is no doubt, more mineral than half of the mines recently set to work in Cornwall. I am not aware that this property is taken up by any one at present, and I would invite gentlemen, wanting a real good mining undertaking, to come and see, and make a thorough investigation, and be satisfied for themselves.—*Helston, May* 18. PRACTICAL MINER.

MARBELLA IRON ORE COMPANY.

SIR,—I can fully confirm the statements made in last week's Journal by "A Scotch Mining Engineer" respecting the position and prospects of this company. When the next balance-sheet is submitted I feel sure the shareholders will be agreeably surprised; possibly though an interim dividend may be declared in July. It must be borne in mind that this company is independent of the English market for the disposal of the ore; also that the ore is specially suited for steel making, and that the cost of production is exceedingly low. Present shareholders should increase their holdings, especially should there be a lull in the prices of the shares, which are steadily advancing as the merits of the company get more and more known.—*Manchester, May* 18. A SHAREHOLDER.

MINING IN THE LISKEARD DISTRICT—No. IV.

SIR,—"Cousin Jack," in the interest of fair play, has a trite and admirable expression, "let the right horse wear the right saddle." How often in this great town and elsewhere has it been named to me that certain families founded the Great "this" and "that," and other mining successes, when it has been as wide of the point as if they had laid claim to the discovery of the moon itself. Take "Old Stowes" and Clinacombe to wit. How often has it been said to me, and in my presence, that certain families and persons founded the great mining discoveries enumerated. This great mineral outcrop was known to the ancients, and was often successively opened upon at different periods, and, therefore, could not be called modern. Some 90 years ago it was recognised by Capt. W. Snell, of Gunnislake, who thoroughly approved of it as a mine of great prospective value and a first-class enterprise, and to all subsequent miners it was known to possess great prospective merit. Capt. W. Snell's sons, in the hope of being able to bring it forth, "bagged out," as it was called, in the hope of dragging it through. But they lacked the necessary means, and were obliged to retire therefrom, and it laid there abandoned and obscured until the day when Capt. Joe Malachi saw that he could bring it forth. It was to Capt. Joe Malachi's genius that the re-opening of this "run of mines" must be attributed. He had derived his inspirations from Capt. W. Snell, and he founded a company to undertake its thorough development, and right well did they do the work. And the praise of re-opening these great mines successfully must be due to the directors of the said company so formed by Capt. Joe Malachi, and to no other persons or party. Capt. S. Seccombe's connection (like my own) was accidental. He was appointed agent in charge, and I wrought there in the capacity of working miner, and I often exhorted him to persevere and to encourage his directors, and, therefore, I lay as much claim to the honour of the discovery as Capt. S. Seccombe could do, or any other person short of the actual discoverers.—*London, May* 16. A MINER.

SCHOOL OF MINES—SOUTH DEVON DRESSING, AND THE COST-BOOK SYSTEM.

SIR,—This engrossing subject, referred to in last week's Journal by A. C. Barter, whom I have not the pleasure of knowing, is one of sufficient importance, I trust, to admit of it being well ventilated through the *Mining Journal*. If there be one subject of more importance than another in dealing with the ores of any mine, it is that of taking care to send the most valuable produce for sale, and not to allow it to flow down the river after all the expense of discovering, and developing, and sending to the dressing-floors has been incurred. Whether the cause of the loss of valuable ore be inability, ignorance, or the inattention of the dresser—or the employment of improperly constructed machinery—it fully deserves attention from those who take the responsibility of management, however numerous their engagements. It has been incomprehensible to shareholders who have watched the reports and sales of ore to understand what becomes of the valuable ores sent to surface at the South Devon United Copper Mines, as it cannot have been included in the sales. Courses of 2 or 3 ft. of solid ore, from which samples have been taken from the several points of operation, and assays of 25 per cent., 23 per cent., 21 per cent., 18 per cent., 15 per cent., and only in one part with simply 4¾ per cent. of pure copper, but making an average, after estimating the relative productions of each of the ends and stopes from which samples were taken, of produce 17 per cent. This, at the present low price for copper, should sell at nearly 9*l.* per ton of ore, but the sales have not averaged 3*l.* per ton.

The charge for dressing a ton of ore at South Devon also is double that of the cost at Devon Great Consols, as given by Mr. Moses Bawden, the purser, and set before the Devon Consols shareholders at public meeting; whereas the greatly improved machinery at South Devon we were informed would reduce the cost of dressing to the cost of any other mines. The question is naturally asked, what is the cause of all this loss of ore? and without careful investigation it is hardly fair to charge it upon the dresser, as Mr. A. C. Barter has done, and when it is considered also that the agents at the Devon Great Consols appear to charge it to improper machinery, though it is strange that an effective dresser, if such there be upon South Devon Mines, should not also detect the evil. The loss is to a considerable extent accounted for by Devon Great Consols agents in the soundest possible manner by their conduct (which speaks louder than words), and which should long since have influenced the "managing director" of South Devon. What is that conduct? Why they refuse to admit upon their mine the destructive "stone-crusher," alleging that if that machine were added to their dressing machinery the 2000*l.* worth of ore now usually sold monthly at these mines would be entirely lost. These statements are in black and white in the Journal, and yet in the face of these facts the same so-called "managing director" of each mine continues the working of this wasteful, destructive, and ruinous machine at the South Devon Mines to the dreadful loss, not of the whole of the rich ore certainly but simply a loss of two-thirds of the whole broken and sent to surface. The statement, therefore, made by A. C. Barter, startling as it at first appears, is more than proved as to loss, though the Devon Consols agents do not attribute it to the same cause. It is five months since the statements of the agents of Devon Consols were in the Journal, which fairly demonstrated these facts, and no change seems to have taken place at South Devon dressing.

Do not these facts draw to the conclusion that to work mines effectively the Cost-book System should be carried out? The present South Devon, with courses of ore not half so valuable as the mine at present contains, while worked as Brook Wood Mine under the Cost-book System, paid dividends exceeding 3000*l.* a year upon a capital of 8000*l.* It is true that the Devon Great Consols has paid splendid dividends as a limited company; but do not the facts stated show that it was resident management that has done it, and not through managing directorships, so called? The admirable feature, according to the opinions of first-class practical copper dressers, in the stone-crushing machine, is its ability to aid lazy, indolent dressers, by disposing of almost any quantity of rich ore, so as never to trouble dresser or manager again with the sight of any part of it.

With a mine richer than ever it had been under the Cost-book System, with full power over the water, instead of being previously restricted to dressing water for four hours a day with the full command of a large capital to work in every direction, it is lamentable to notice the position of the finest mining property in the West of England but it is time that every shareholder should speak through

your Journal to put an end to waste on the one hand, and entire neglect on the other, of the most valuable points in the property, and thus protect their own vital interests. My friends and relatives are cost-book mining parties, and for the first time I have launched into a limited company, depending on the reputation of the managing director for great success. No one can wish to do or say anything ungenerous towards Mr. Peter Watson, but if he does not mind he will recede from his high position, and it would be a great pity if he at one stroke destroyed his reputation and cut short his career for usefulness from a fondness for the glitter of gold. The reports from South Devon warrant expectations of another success in copper mining equal to the Cape Copper. Why should not such a prize be sufficiently glittering to induce the managing director to secure it seeing it is within his reach. CHARLES TOFTS.

Fenchurch-street.

GREAT POLGOOTH UNITED.

SIR,—I have weekly been expecting to see some mention of the above mine in the Journal, but have so far been disappointed. Can anyone of your readers enlighten me as to what is being done, as I was under the impression that progress would be made energetically? According to the various reports of competent men, which were published with the prospectus, this mine ought to be a most valuable undertaking, and I trust the shareholders will give the directors every encouragement to develope its resources without delay.

SHAREHOLDER.

THE CHEAPEST TIN SHARES IN CORNWALL—WHEAL JANE.

SIR,—The merits of this mine are not generally known, therefore not appreciated. There are 12,288 shares, the outlay up to date has been 1*l.* 5s. 8d. per share, and the dividends paid have been 1*l.* 7s. 6d. per share. The mine is well supplied with all the necessary machinery, pumping engine (in fact, another engine has just been completed and put to work), the dressing floors are large and in excellent order, and nothing now remains for them to do but to fork the water and work the tin ore ground known to exist in the bottom and the adit levels, to bring the mine into a profitable paying condition. The machinery on the mine cost 10,000*l.* to 12,000*l.*, and the shares are actually selling at 12s. 6d. to 15s. each; there being 12,288 shares, about 7680*l.* for the whole property as it stands, including all the machinery, &c. Compare this with other tin mines and new companies. Wheal Jane is a thoroughly sound and legitimate property, and shares are certainly worth five times their present value now, which they will reach, and much higher, excluding dividends which they will pay in 1882. Just now there are several neglected mines, some paying all costs from sales of ore, with excellent prospects for dividends and a great rise in price. INVESTIGATOR.

CORNWALL GREAT CONSOLS MINING COMPANY.

SIR,—The readers of the Journal are doubtless acquainted with the early history of this company. The promoters issued the shares to the public at 5*l.* each. On receipt of the money they paid 1*l.* to the purser, and retained the remaining 4*l.* as their own profit. They sold 2877 shares before it was discovered to the horror of the shareholders that the company was on the Cost-Book System. A general meeting was called on June 3 last, when the directors were ousted, and a fresh board installed in their places. The new directors were not all that could be desired, so they in turn had to relinquish the reins of government in August last, and a set of business gentlemen from amongst the shareholders were chosen, came into office in that month, and found in the treasury the sum of 540*l.* wherewith to sink the shaft and otherwise work this new mine. So frightened were the shareholders at finding themselves interwoven in the meshes of an unlimited liability company that about 800 shares were relinquished. Those 800 odd shares were by the new directors offered to the shareholders *pro rata* at 1*l.* each, when nearly three times the number offered were applied for; this issue is called the Sandy issue. Meanwhile the company's solicitors—Messrs. Linklater and Company, of Walbrook—were taking the necessary steps to change the company from the Cost-Book to the Limited Liability System, which has been satisfactorily accomplished. These 827 shares, sold at 1*l.* each, added 827*l.* to the treasury, out of which we have bought a new steel boiler on the principle of Galloway's latest patent, and the "wags" in Cornwall say it is the first new boiler that has been put up in Cornwall during the present century. There were five buddles working, and producing above 200*l.* worth of tin per month, at a cost of about 220*l.* per month. We have put down four more buddles to start simultaneously with the new boiler, and we have laid new flooring around the new buddles, and we are putting a roof over all the buddles and flooring on which the tin is dressed, and we have built a number of out-houses, and put up other machinery which was necessary, all out of our little widow's mite-like capital, and we have no debts whatever, everything being cleared off every pay-day, after the healthy Manchester fashion. In November next we shall require new pumping-engines and pumps, and in order that we shall have them ready for the mine when the shaft is sunk to the 50 fm. level, and not keep the mine waiting for pumping machinery, the directors have issued 1000 shares *pro rata* to the shareholders at 2*l.* each, being a premium of 1*l.* each, wherewith to pay for this machinery, and otherwise develope the resources of this mine, and in obedience to the call 1679 shares have been applied for.

West Gorton, Manchester, May 16. THOS. ADAMS, Chairman.

MINING IN CARDIGANSHIRE.

SIR,—Amongst the mines which have recently been started in this county I notice one lately registered as a limited company by an active proprietary, called the Craignant Bach Lead Mine, which is worthy of more than a mere passing notice. When we see such a mine as this put to work it is evidence not merely of an active mining period, but also of sound judgment and discretion on the part of its promoters. It is a mine with a great past reputation, joining up to the Clara Consols on the one side and the Llwernog and Powell United on the other, and has a reputation of having more rich and mineral producing lodes running through it than any other mining sett in the county, being seven cast and west lodes and two north and south lodes. We have no doubt whatever of this mine under the careful management of Capt. Andrew Williams turning out second to none in the county in its profitable returns to the shareholders, as it stands well for working economically close to the turkpike road for carriage, and has ample water-power and a very fine iron water-wheel, with pumping gear all complete. Upon lately walking over the mine we were pleased to see the miners bringing up large samples of lead just broken, and that they have an excellent double course of lead in the 12 fm. level, worth at least 4 tons of lead per fathom, and an equally rich course in the 24 fm. level, and this we are told at the 40 fm. level increases vastly in size and strength. As we said before, we wish all success to this undertaking, and feel satisfied that it will still further illustrate the vast mineral wealth of this country, and will satisfy shareholders that a mining investment does not always mean, as is so frequently alleged, a fruitless outlay of money, but, on the contrary, means large and profitable returns to fortunate and plucky investors. H. B. S.

Manchester, May 18.

[For remainder of Original Correspondence see this day's Journal.]

COMPRESSED GUNPOWDER.—Some interesting experiments with Messrs. France and Baker's compressed gunpowder have been made at Messrs. Pease's mines, in Skinningrove, Cleveland. The powder, which was Curtis and Harvey's, had been compressed into a triangular form, so as to fit the drill-hole, and cut in short lengths, some weighing 2 to 3 ozs. each. The holes were drilled in the same way as if they were about to be charged with loose powder, the triangular blocks were placed in and exploded in the ordinary manner, but more than the usual quantity of stone was brought away. In all 11 holes were charged, requiring altogether 162¼ ozs. of the compressed powder, whereas with the powder loose it would have required, in the judgment of the miners themselves, no less than 267 ozs. This shows in powder alone a saving of just 40 per cent., to say nothing of the advantage in charging and the diminution of danger. It will, therefore, be seen that the results so far obtained are of the most satisfactory nature.

REPORT FROM CORNWALL.

May 19.—There is little change to report in the condition of affairs. Mining is what may be described in familiar phrase as "jogging on," living in hope, as a rule, but with a very fair amount of realisation notwithstanding. A very good proof of the steady and confident character of the present feeling in the county is seen in the way the prices of shares are maintained, however tin may fluctuate in the London market. There is no disguising the fact that stocks are reduced, consumption increasing, and production falling off, and practical men know that to such a state of things as that there can only be one issue. We do not anticipate now, however, that there will be any advance of importance—or, indeed, any material change at all—until Midsummer.

East Pool is certainly a notable and in not a few respects may be regarded as a typical mine—typical, that is, of the general course and prospects of Cornish mining when fairly conducted. It is not merely that it has declared another 1*l.* dividend, but that it has manifested so much wealth and staying power. Within the past seven years, as Mr. Martyn pointed out—that is, since 1874—it has paid off debit balances amounting to something like 12,000*l.*, and, including the last dividend, has paid in profits about 66,000*l.* Probably, too, there never was a period when the mine looked better. When doubts are expressed as to the prospects of Cornish mining it is to such concerns as these that we would point for an answer—mines that, thanks quite as much to good management as to their natural value, have weathered the storm, and not to the non-success of ephemeral undertakings, some of which—at least in the ordinary commercial sense—were never meant to succeed. There is cause just now to emphasise the caution we have already expressed in this direction.

It is to be regretted that the subject of the testimonial to Mr. Waddington *in re* the opposition to the dynamite patent, should have been allowed to crop up again at East Pool account. Not that we in the least undervalue Mr. Waddington's services, or think the proposal unworthy. That is a point upon which we have already expressed an opinion. But the misfortune is that the bare mention of the subject opens the door to ill-natured and ill-grounded remarks, which had far better be left unsaid. We are quite sure that Mr. Waddington himself would not wish to detract from any man's merits; and how the merits of the labours of Capt. Teague and Capt. Thomas and Mr. Williams and the other leaders in the anti-monopoly movement are to be advanced by depreciating Mr. Waddington we cannot see, nor are we sure do they. It seems to be very much of "Save me from my friends" all round. Would it not be more advisable just now if any superfluous energy were directed to ascertain whether it is true or not—as alleged—that the so-called cheaper dynamite is of such inferior quality that it is not cheaper at all, whether, in fact, any direct advantage has so far been gained. There are those who doubt it.

In reference to the completion of the Eddystone lighthouse, to which recent allusion was made, it has been announced that the De Lank Quarries have been new named, and in future are to be known as the Eddystone Quarries, a very appropriate, historic, and business-like title.

And in regard to building stones no little interest and some amount of feeling has been excited in the county by the proposal of Mr. Pearson, the architect of the Truro Cathedral, to use Bath stone in the construction of that edifice. Now, however valuable Bath stone is when used under proper conditions, it has never yet approved itself in Cornwall, and there is a very strong impression that its employment would be a huge and costly blunder. We in Cornwall are in the habit of thinking a county which possesses about the richest variety—all things considered—of building and ornamental stones, taken together, in England, is sufficient for its own purposes in such a matter to say the very least, and the proposal is meeting with stout opposition. Granite, of course, on the question of cost is out of the question, unless the free-working St. Stephen's granite were used, which was employed in the erection of St. Probus Tower, and which in quantity might be found too free. But there are several elvans which are of the highest repute, not only for their cheapness but their lasting qualities, such as those of Wild Duck, Newnham, Pentewan, and Seveock, while for dressing there is the Polyphant, if not the Cataleuse. Then again there are other building stones of local note, such as the Margate and its allies, which work easily and have weathered for centuries without damage. We might as well go to Wales for roofing slate and ignore Delabole—in fact, a good deal better, for against the Welsh slate there is not a word to be said—as ignore local building materials like these and "go to Bath." Mr. Pearson of course cannot be expected to have the same knowledge of the resources of the county as a local man, but that is all the more reason why the committee should keep their eyes open.

REPORT FROM NORTH AND SOUTH STAFFORDSHIRE.

May 19.—The colliery proprietors report this week that the demand for neither furnace nor forge coal shows improvement, since the amount of business which the blast furnace and mill and forge proprietors are doing does not increase to any conspicuous extent. Prices are without alteration upon those quoted in last report. Domestic fuel tends downwards in price, though no official reduction has yet been announced by the Cannock Chase owners. The chief feature of the pig-iron market yesterday and to-day was that high class sorts, whether hematites or all-mine pigs, were slightly less firm in price. Business could not be done in hematite pigs at more than 65s., and exceptional sales were made in some brands at not much above 60s. All-mine Staffordshire pigs were quoted at 3*l.* 5s. and 3*l.* 2s. 6d.; but consumers are looking to buy alike common and all-mine iron at less than present prices. Common pigs were 1*l.* 17s. 6d. per ton. Derbyshire sorts changed hands at 2*l.* 2s. 6d. The manufactured iron trade keeps dull. Some common sheets for export are selling at less than 6*l.* 15s. per ton at works, though the more general price is 5s. per ton above this figure. Other prices without change.

A meeting of the Willenhall Furnaces Company (Limited), Willenhall, has been called to consider the desirability of voluntarily winding-up the concern by liquidation. The depression in trade, and accumulated stocks have caused the directors to cease making lately, and as trade has not revived, and there have also been some losses, the directors have now summoned the shareholders to consult upon the propriety of appointing a liquidator. There has been no meeting of creditors summoned; action is at present wholly confined to the shareholders, and originates with the directors.

At a meeting of miners, held at West Bromwich, the men passed resolutions agreeing to join a miners' insurance scheme, on conditions that the masters contributed to the fund an amount equal to that subscribed by the men. This resolve was come to after it had been decided that the Employers' Liability Act did not meet the needs of miners. The promoters are looking forward to receiving the 3000*l.* balance of the Hartley Accident Fund, and also some of the 2000*l.* that was subscribed in connection with the Pelsall Colliery accident.

On Monday about 3000 miners commenced work at a reduction of 10 per cent. in wages in the district of Longton. At Berry Hill Colliery, near Hanley, and at the Great Fenton Colliery, near Stoke-on-Trent, notices for a similar reduction, which expired on Saturday, have been suspended for 14 days by the employers, to see if trade will sufficiently revive in the meantime to enable them to be withdrawn altogether.

PARKGATE IRON COMPANY (Limited).—The 17th annual report of the directors says:—The works and machinery have been maintained in an efficient state. The cost of re-lining and re-modelling No. 3 blast-furnace has been charged to revenue. The stock has been carefully taken and valued in the usual way, at the present low current prices. During the past financial year the company derived considerable advantage from the contracts that had been previously made during the temporary excitement which prevailed in the iron trade. The prices of pig and finished iron are at the present time extremely low, and athough there is a moderate demand for finished iron the margin of profit is very small. In consequence of the substitution of steel for iron rails and the improbability of the rail-mill ever being again required for the purposes for which it was established, the directors have considered it desirable to appropriate the sum of 5000*l.* out of revenue in reduction of the cost at which this mill stands in the books. This sum has been paid to the bank in reduction of the special loan of 20,000*l.* After providing for bad debts and all other charges the net profit made during the past year is 14,996*l.* 3s. 7d., which, added to the sum of 795*l.* 10s. 6d. brought forward from last year, makes an available total for distribution of 15,791*l.* 14s. 1d., out of which an interim dividend has been paid amounting to 4858*l.* 15s. It is now proposed to pay a further dividend of 3*l.* 5s. per share on 2990 shares, making a total dividend of 4*l.* 17s. 6d. per share (or 7½ per cent. for the year) and to carry forward 1215*l.* 9s. 1d. to the next year's account. The directors retiring by rotation are Messrs. Charles Markham and James Higgins, who are eligible for re-election.

CONVICTIONS UNDER THE MINES REGULATION ACT.—At Tunstall Police Court, on Thursday, Mr. Robert Beswick, jun., manager of the Chell Colliery, was summoned by order of the Home Secretary, on several charges under the Mines Regulation Act. Mr. Booth prosecuted, and Mr. Hollinshead defended. Mr. Booth said that on March 31 an explosion took place at the colliery, causing serious injury to a man named Woodcock, but no notice was sent to the Government Inspector until April 6. Mr. Hollinshead said he had gone through the facts of the case with Mr. Beswick, and he had advised the defendant that legally he was in the wrong. There had been an explosion, but it was a very slight one, and the man who was burned was but slightly injured. In reply to the Stipendiary, Mr. Booth said Mr. Beswick was also charged with allowing loose powder to be taken into the pit within three months after inflammable gas had been found there; with allowing a light other than a locked safety-lamp to be used in a place where there was likely to be an accumulation of explosive gas; with not causing an adequate amount of ventilation in the mine; and also with having, on February 16 and 24, and March 16, after withdrawing the men from the pit, which was found to be dangerous, failed to report the same in a book kept for the purpose. The Stipendiary said, as the offences were admitted, after the explanation of Mr. Hollinshead, he thought it would meet the case if the defendant paid 10*l.* and costs for the first offence, 5*l.* and costs for the second, and 2*l.* and costs in each of the other three cases. The fines and costs amounted to 26*l.* 15s. 6d.—Paul Willitt, fireman, was charged with not causing a workman, in a part of the mine producing and retaining fire-damp, to be provided with a safety-lamp, and with not prohibiting him from taking any other light into the working place; and also with having, in a portion of the mine where there was an accumulation of explosive gas, allowed an unlocked safety-lamp to be used. Mr. Hollinshead, on behalf of the defendant, pleaded guilty, and said he had no doubt he was to blame for the offences for which Mr. Beswick had been innocently guilty.—Mr. Greenwood inflicted a fine of 40s. and costs for the first offence, and another of 5s. and costs for the second.

TRADE OF THE TYNE AND WEAR.

May 18.—There is a good demand for steam coal, but the supply of tonnage has been insufficient during the past few days, owing to contrary winds and boisterous weather on the North Sea. The shipment of coals to the Baltic is improving rapidly, and the shipments to the Mediterranean are also considerable. The shipments of coals from the Tyne Dock and other docks in those rivers have been large during the week, but would have been larger if the supply of tonnage had been good. The local trade in coals and coke is steady, and improving to some extent. There is not as yet any improvement in prices of any description of coal, but an advance, it is hoped, cannot be long delayed. The output from new winnings, or works reopened, is not likely to be much increased for some time to come; it is, therefore, reasonable to expect that the demand for shipment during the present season will enable the coalmasters to realise better prices than have ruled of late. The chemical trade at length shows some improvement, and a slight advance in price has been realised during the past week.

THE SWAN ELECTRIC LIGHT.—On Thursday Swan's system of lighting by electricity was demonstated at the office of Messrs. Graham, Glasgow, when a number of gentlemen were present, including Sir William Thomson, Principal Jamieson, and many others. Mr. Swan's method of diffusing the light was shown by the illumination of a portion of the premises by means of small vacuum globes of 25-candle light being hung and fixed in different parts of the hall. The experiments were entirely successful, and fully proved that the light can be used in houses, &c. Sir William Thomson briefly explained the light on Swan's system, and remarked that the problem of domestic lighting had now been completely solved, adding that the electric light could be supplied and regulated as easily as water or gas. It is stated that this system of lighting is to be adopted on board the new Cunard service.

THE ELECTRIC LIGHT AND COAL MINING.—On Saturday Mr. Swan was present at a meeting of the North of England Institute of Mining and Mechanical Engineers, which took place in the Wood Memorial Hall, in Newcastle, when he exhibited his light as adapted for mining purposes. Mr. G. C. Greenwell occupied the chair, and there was a large attendance of members. Mr. Swan said that the light can be divided indefinitely, and that it had been suggested to him that the lamp in a suitable form might be used for the purpose of lighting mines, as a substitute both for open lights and for safety-lamps, and he now showed a lamp which might, possibly, be suitable. It would be quite safe in an explosive mixture, on condition that the glass did not break Another source of danger was the accidental rupture of the wires, and care would have to be taken in detaching the wires. Mr. Swan is having 50 lamps made, and they would be placed in the hands of the members of the Accidents in Mines Commission, and tried at a colliery in Nottinghamshire and elsewhere for lighting pit heaps. As a safety-lamp they would be tested in the laboratory of Prof. Abel. The subject is certainly one of the most interesting character. There is little or no doubt that the electric light will pretty rapidly come into use for dwelling-houses and shops, and also for streets and various open places, including pit heaps and the underground workings of collieries, with the exception of those inner parts of colliery workings where it is necessary to use safety-lamps; but the use of the electric light in substitution for the safety-lamps now in use can only be effected when the apparatus to generate the current is so far reduced in size, weight, and cost as to render it self-contained and absoluty portable, This it is possible may in time be effected, but as yet that has not been accomplished; and if this was effected we do not see clearly what advantage can be derived from it. The present safety-lamps are quite efficient and portable, and they ought to be used only as a safeguard against sudden outbursts of gas, and not for the purpose of working in an explosive mixture The invention of a lamp, therefore, which would continue to burn in an explosive mixture so long as no breakage took place in any of its parts, might prove of doubtful advantage—it might lead to a dependence for safety on the lamp instead of efficient ventilation and keeping the mines clear of explosive mixtures,

The pig-iron trade has been in an extremely stagnant state during the past week, and prices have again fallen to a very low point. On Friday No. 3 pig-iron was sold at 36s. 7d. per ton. Various reasons are given for the late great decline. No doubt excessive speculation at Glasgow and the great make in Cleveland are the main causes. Stocks are still increasing in this district, and the shipment of Scotch pig metal have been small lately. The furnaces in Cleveland have been kept all going during the past quarter, while in other districts 15 furnaces have been blown out during that period. Unless some revival takes place shortly this course must also be adopted in Cleveland. The finished iron trade continues to improve. Makers will not accept less than 5*l.* 10s. for angles and common bars, and about 6*l.* 5s. for ship-plates. The steel trade in Cleveland continues prosperous at the Eston Works of the great company Bolckow, Vaughan, and Co.; 3500 tons were turned out last week, and this will be largely increased shortly. A new steel-plate mill and a new rail and angle mill are to be put down immediately. Steel ships may still be considered a novelty, but there is no doubt that steel will ultimately take the place of iron to a great extent in the construction of ships. This company have at present eight Bessemer convertors at work.

Irom shipbuilding continues to improve, and the industry seems to be gradually gravitating to this district, and so long as we retain our incomparable wealth of coal and iron, and the workmen and masters work amicably together, this is likely to continue. It will

be seen from the figures given below that we stand at the head of the United Kingdom in the number of ships built and also in the tonnage. In the Newcastle district in 1880, 264 ships were built, the tonnage being 238,130 tons, and average size of ships 903 tons. Glasgow is next with 203 ships, tonnage 147,694 tons, average size of ships 710 tons Very nearly one-half of the total shipbuilding of the United Kingdom is done in the Newcastle district.

THE STEPHENSON CENTENARY.—The occurrence of the centenary of the celebrated engineer naturally attracts attention to his remarkable career, and the results of his inventions and labours. A lecture on his life and career was given in Newcastle in December by Mr. Thomas Macnay, of Darlington. The lecture, accompanied by views of Stephenson's birthplace, and other objects associated with his name, has been published by Mr. Reed. The first work done by Stephenson which showed his inventive powers as an engineer was the improvement of the pumping-engine at Killingworth. He was then employed as an engine driver, and the engine having failed to keep the shaft clear of water he volunteered to improve it, and succeeded in making certain improvements, which so increased the power and speed of the engine that the shaft was speedily cleared of water. He is generally held to be the inventor of the locomotive, but this honour is due to Trevithick, a Cornish engineer, and it was improved by Hedley, Hackworth, and Stephenson, and the latter effected the greatest improvements in it, as was clearly shown by the competition which took place at the opening of the Manchester and Liverpool Railway, when Stephenson carried off the prize. The engine works in Newcastle were then founded by Stephenson, and further improvements were effected rapidly. The slot link, a very important invention, which has proved of immense service both in the locomotive and other engines, was the work of Mr. Howe, a pattern maker in Stephenson's factory. This ingenious man was engineer many years at the Clay Cross Coal and Ironworks in Derbyshire, and he died only a short time ago. The work Stepenson accomplished in connection with the locomotive engine was only a part of his labours, as he took a leading part in the construction of railways, important bridges, and other works, and also constructed a safety-lamp, which is still in use, and it is considered the safest lamp in existence. The place of Stephenson's birth, and Wylam where his youth was spent, certainly possess much interest in connection with him; but Killingworth is the most interesting spot, as it was in this place that his skill as an engineer was first proved, and here where he constructed his first "travelling" engine, it being employed here in drawing the coal wagons on the colliery railway. We have known several men who were contemporaries of Stephenson, but at present only one who knew him well; this is Mr. Tate, the colliery smith, at Killingworth, he was present when Stephenson started his first engine; this was in 1816, Mr. Tate being then 10 years of age. This remarkable engine, which may really be considered as the pioneer locomotive, was called Blucher, after the Prussian General. Engines of this primitive type were worked some years on the Killingworth and Springwell Collieries railways, and one of them is preserved at Killingworth, and when the writer was there a few days ago workmen were busy re-fitting the engine, which will appear in the procession from Newcastle to Wylam, which is to take place on the centenary day. The cottage occupied by Stephenson at Killingworth remains in about the same state as when occupied by him, and a sun dial he put up on the front of the house is also in excellent preservation. The date on the sun dial is 1816, the year when his first travelling engine was started. Thirty heavy goods engines are now being constructed at Stephenson's Works, in Newcastle, and No. 20 will be finished, and will also join the procession. The contrast between the first engine and this No. 20 engine is of course very striking. A glance at the results of this movement which began in this obscure corner in the North may be of interest. In Europe and America there are now 190,700 miles of railway; in the United Kingdom 18,000 miles of railway worked by 13,174 locomotives and 421,123 carriages, with an annual working expenditure of 32,000,000*l*. They have a paid-up capital of 720,000,000*l*. sterling, they carry annually 600,000,000 of passengers, and about 220,000,000 tons of goods, &c., and yield a gross annual revenue of 61,776,000*l*. In Europe there are 102,700 miles of railway—Germany, 19,000 miles; Great Britain, 18,000 miles; France, 17,000 miles; Russia, 15,000 miles; Austria, 11,500 miles; Italy, 5000 miles; Spain, 3800 miles; Belgium, 2400 miles; Switzerland, 1700 miles; Holland, 1300 miles; in other States 8000 miles. The capital invested in these lines is about 3,000,000,000*l*. sterling.

REPORT FROM NORTH WALES, SALOP, AND CARDIGAN.

May 19.—Perhaps before leaving the Mona mines I should advert to the second natural chemical process, by means of which the sulphate of iron, which is the product of the union of the refuse iron with the sulphuric acid in the precipitation pits, becomes oxide of iron. The change is effected by the exposure of the sediment to the action of the atmosphere, the oxygen of which, to a very large extent, takes the place of the sulphur in the mass, and the ochres are the result.

There is no railway or tramway from the mines to the smelting works and the port, and I have on more than one occasion found fault with this omission of the good times past in these reports.

The difficulties lying in the way of constructing such a line were, however, explained to me; and I also learned with satisfaction that the cost of cartage is reduced to a low sum by the possession and cultivation of a farm in connection with the mine, at which the 20 to 25 horses employed in cartage are kept. The farm is under the care of the respected mine agent, Captain William Hughes, who is a fine type of a well-built Welshman, farmer and miner combined.

Let us now follow the ochres and ores down to the port and smelt works; a quaint, safe, rock-bound creek, crammed with sailing craft, and looking altogether like some far-off out-of-the-world little haven, is the port. It has, however, a good shipbuilding trade connected with it, and it was with interest that I went through the shipbuilding yard of Mr. Thomas, and into the room where the lines of the ships are laid down, and the walls of which are adorned with the half-models of the vessels which have been built there. The port, as I understood it, is the property of the Mona Mine Company.

The ochres and bluestone are shipped direct, and having seen them on board, we have done with them. We ascend the incline to the smelting-house—a large, massive pile of buildings of stone, bearing the respectable marks of antiquity, with ample room and appliances for more work as the products of the mine increase. At present there is one large ore calciner, six calcining kilns, and four ore furnaces on work, with the work of extension going on.

The ore as it has come from the dressers at the mine is placed first in the calcining kilns, where at a slow heat, a good part of which is generated by the combustion of the sulphur itself, the sulphur in the ore is driven off. Formerly, and still I believe to some extent, the sulphur from a portion of the ores is utilised by the Messrs. Hill and Sons at the adjoining chemical works for the production of sulphuric acid. When the ore is removed from these kilns it is placed along with a portion of the copper precipitate from the pits, which acts as a flux into the ore furnaces. From these when it is ready it is run off into earth moulds prepared to receive it, the copper running off first, and filling the first one or two moulds, the slag following after, and, passing over the copper, filling the remaining moulds. Portions of this slag which are seen to contain copper are put into the furnaces again with subsequent charges of ore, and run off. Thus by a simple and not costly process the ore which comes from the mines of an average strength of 6 per cent. is brought up into regulus of 50 per cent., obviating the necessity of dressing by jigging and the like, and at considerably less cost.

As the summer is the time for the sale and cartage of the ochres the horses are utilised in the winter for the conveyance of stores, coal, timber, and the like to the works and the mines. The whole arrangement has the stamp of intelligent resident direction. Everything is utilised as at a mine it should be. There is none of that exaggerated regard for the more valuable products, which often leads to a disregard of those less valuable ones at a mine which are, nevertheless, when rightly utilised safe and sure sources of income. If, as is the case here, ordinary business principles were oftener applied to mining this branch of industry would lose much of the risk and of the opprobium that now attach to it. Such is the story of a pleasant visit to the Mona Mines, and my thanks are due to Mr. Fanning Evans and Capt. Hughes for the courtesy shown to me on the occasion.

Turning to quite another subject, I am glad to record real and marked improvement in the slate trade of North Wales. I write today in a great centre of this industry, and all around on the countenances of owners and managers a more cheerful look is apparent.

The Baltic trade has begun for the season, and orders are flowing in. The great scare of foreign, and especially of American, competition has now disappeared. Talking of the latter, I saw yesterday the most successful slate quarry owner in America—a man who years ago worked near where I write for 9s. a week. He is now making a tour of all the slate quarries in Wales, and indeed of Europe. Another visitor to Wales last week was a German slate quarry proprietor, whose quarry near the old City of Treves is one of the most successful in Germany. The magnitude and the appliances of the Welsh slate quarries have, however, filled him with amazement, as his frequent exclamation of "wunder schön" testifies.

I am watching with interest the progress of the Salt Mines Bill, now before Parliament, but will defer my criticism on parts of the evidence. The mineowners, with the aid of scientific men, are evidently making a determined stand against paying anything for damage to the owners whose substances they are pumping up and throwing upon.

REPORT FROM DERBYSHIRE AND YORKSHIRE.

May 19.—In the lead districts of Derbyshire business remains in about the same state as it has been for some time past, there being something like an average output of ore. It is, however, still stated that two or three mines, principally worked by miners, are about to be taken over by parties who are said to have some capital at command. This is what is really required to make lead mining profitable even in a small degree, for experience has shown that it is only those mines that are carried on by modern machinery and appliances that can pay. There has been nothing new of late as regards our ironstone mines, and but little is heard of them, for ironmasters appear to have come to the conclusion that it suits them better to import it from Northamptonshire than to raise it at home. The raw iron trade is in anything but a healthy state now, and sales are not easily effected, for consumers cannot be induced to buy for forward delivery, so very uncertain are the leading markets. The rolling mills are still quiet, but some of the foundries are fairly off for business, more especially in the engineering and mechanical departments. At the Dronfield Steelworks there is continued activity, as it appears that no less than 380 tons of steel are made every 24 hours and converted into rails. The house coal trade is generally getting worse, and considerably less is now being done with the Metropolis, whilst prices are falling, as might be expected.

At the Slewland Colliery, formerly the property of the South Yorkshire Miners' Association, and given up by that body after a loss of many thousand pounds, work has been stopped owing to an influx of water, which has stopped working operations and caused the horses to be drawn to the surface.

The Clay Cross collieries supply the largest quantity of coal to the Metropolis that is taken by railway; and owing to disputes in other districts in March, the demand was so great that the company gave an advance of a penny per ton. Now, however, that business has got into its ordinary groove, the men have had to submit to the penny being taken from them; so that now there is more likelihood of a still further reduction than otherwise.

In Sheffield there has been some improvement in several branches of late, and the mills are now running well, so that puddlers and shinglers are favourably off for work. The new composite plates of iron and steel have at last found favour with our Board of Admiralty, and large orders for them have been given out to the Atlas and Cyclops works, the chairmen of the two companies having taken patents out for them, but the difference between the two does not appear to be much. Good orders are in hand for steel rails and railway materials for the home as well as for other companies, but prices get lower, and our makers are in a much worse position than those who have works close to shipping ports, the railway rate being an important item for consideration in the taking of contracts. In crucible steel there is rather more being done, as that material is coming into greater request for structural purposes. The principal cutlery houses are favourably off for business, the finest qualities of table-knives being in most request, not only for our own markets, but for exportation as well. Edge tools are also in fair request, and makers of sheep-shears are now actively employed, the exports to our own colonies and South America being greatly increased. Steel plates for ship-builders are gradually making their way, but at the same time a good business is being done in ordinary iron plates for ship-builders and boiler-makers. The foundries are rather better off than they have been, there having of late been a better enquiry for pipes, kitchen ranges, and castings suitable for building purposes.

In South Yorkshire the Coal Trade has become quieter, so far as regards household qualities, and prices have a decidedly downward tendency. Steam coal, however, is going off much better, and as the Baltic may now be considered as all but open we may now look forward to heavy shipments of the Yorkshire hard coal, from Grimsby in particular. A large quantity of the smallest coal produced in our mines is now being converted into coke of a very good quality, and which now successfully competes with that made in Durham, which at one time was considered indispensable for blast-furnace purposes.

MINERS' PERMANENT RELIEF SOCIETY FOR SOUTH STAFFORDSHIRE AND EAST WORCESTERSHIRE.—On Tuesday a meeting of the committee, consisting of the council of the South Staffordshire and East Worcestershire Institute of Mining Engineers, the miners' delegates, and Mr. G. L. Campbell, of Wigan, was held at the Mining Museum, Dudley. The proposed rules were discussed, and, upon the motion of Mr. John Field, the meeting was eventually adjourned until Tuesday, May 31.

RISCA COLLIERY.—A series of experiments have recently conducted here with a compressed-air underground locomotive engine, constructed by the Grange Iron Company (Limited), Durham, and patented by Messrs. Lishman and Young. It appears there are several now working in the collieries owned by the Earl of Durham, and if they prove successful here the London and South Wales Coal Company will be the first company in South Wales to adopt them. When the circumstances render their working practicable a great saving in the cost underground haulage is effected. The system of electric signalling has just been adopted here throughout the shaf nd engine planes.

THE PROSECUTION OF MINE MANAGERS.—In answer to a question put by Mr. Macdonald two or three days ago, the Home Secretary stated that it was not his intention to take further proceedings against the certificated manager or owners of Pen-y-Craig Colliery, but it was open for other persons to do so if they thought well. Now, although the Home Secretary may not be aware of it, the taking of proceedings against a manager by an ordinary person is entirely out of the question, for the Home Secretary is paramount in the matter, the only other person who can take action being the Government Inspector of Mines, who acts under the Home Secretary. The 37th section of the Act of 1872 provides that "any person making a false statement in any certificate of competency of service, or knowingly utters, produces, or makes use of any declaration, representation, statement, or evidence, or any document which is false in any particular, shall be guilty of a misdemeanor, and be liable on conviction to imprisonment for a term not exceeding two years with or without hard labour." This by itself looks very well and satisfactory, and one would suppose that there would be no difficulty in preferring a charge against a mine manager, whose negligence or ignorance had led to a serious loss of life. But such is not the case, despite the statement of the Home Secretary, for according to the 64th section of the Act of 1872 it is provided that, "No prosecution shall be instituted against the owner, agent, or manager of a mine to which this Act applies for any offence under this Act which can be prosecuted before a court of summary jurisdiction except by an Inspector, or with the consent in writing of a Secretary of State." It will thus be seen that the privilege suggested by the Home Secretary as being in the hands of other parties does not really exist, and that no prosecution can take place without his authority or one of the Inspectors of Mines appointed by the Home Office. A person convicted under the Act of 1872, and adjudged to pay half the maximum penalty, can appeal from the decision of the magistrates at the Quarter Sessions; but when the charge against a person for an offence under the Act is dismissed there is no appeal whatever. It will, therefore, be seen that the answer made by the Home Secretary to Mr. Macdonald is really inconsistent with the Act of Parliament, and something very like a subterfuge.

NOTES ON AMERICAN SCIENCE AND MECHANISM.

THE PHOTOPHONE.—At the meeting of the National Academy of Sciences, in Washington, Prof. Graham Bell made a communication of his most recent researches on the principles of the photophone. On his return from Europe a discovery that had been made relative to the marked results obtained when lamp-black formed an ingredient in diaphragms composed of silks and worsteds, led to this pigment being tried alone, with the result that when a teaspoonful of lamp-black was placed in a test tube and exposed to an intermittent beam of sunlight, the sound produced was the loudest that has yet been obtained. When a smoked piece of glass was held in the intermittent beam the sound was loud enough to be heard in any part of the room. When the beam was thrown into a resonator, the interior of which had been smoked over a lamp, curious alternations of sound and silence were observed. The interrupting disc was set rotating at a high rate of speed, and allowed to come gradually to rest. An extremely feeble musical tone at first heard gradually fell in pitch as the rate of interruption grew less. When the frequency of the interruption corresponded to that of the fundamental of the resonator the sound was so loud that it could easily be heard by hundreds of people.

There seems reason to think that a practical result of the discovery here described will be the use of lamp-black in an articulating photophone in place of the electrical receiver hitherto employed. It is now definitely established that the colour and the physical condition of the solids operated on determine the intensity of the sonorous effects. The explanation given by Prof. Bell is to the following effect:—Lamp-black is a substance which becomes heated by exposure to rays of all refrangibility, and a mass of this substance may be looked upon as a sponge with its pores filled with air intead of water. When a beam of sunlight falls upon this mass the particles of lamp-black are heated and, consequently, expand, causing a contraction of the air spaces or pores among them. Under these circumstances a pulse of air should be expelled, just as water would be squeezed out from a sponge. The force with which the air is expelled must be greatly increased by the expansion of the air itself, due to contact with the heated particles of lamp-lack. The converse process takes place when the light is cut off, the particles become cool and contracted, the air space is enlarged, and, in consequence, a partial vacuum is formed, into which there is a rush of air from the outside. Owing to the great molecular disturbance that takes place in lamp-black it is imagined that this substance will entirely supersede the costly selenium electric receiver.

Very curious results were obtained in course of experiments with the solar spectrum. Different substances—solids, liquids, and gases—were used as receivers, disclosing the fact that the maximum of sound produced with them varied in point of position on the spectrum in a remarkable manner. With the lamp-black receiver a continuous increase in the loudness of the sound was observed upon moving the receiver gradually from the violet into the ultra red, far out into which the point of maximum sound lay. Beyond this point a slight motion of the receiver caused complete silence, so abrupt was the passage from the maximum sound into its absence. These experiments have led to the construction of a new instrument for use in spectrum analysis. The eye-piece of a spectroscope is removed and sensitive substances are placed in the focal point of the instrument, behind an opaque diaphragm containing a slit. Those substances are put in communication with the ear by means of a hearing tube, and thus the instrument is converted into a spectrophone. While it is not claimed that the ear can for a moment compete with the eye in the examination of the visible part of the spectrum, in the invisible part beyond the red where the eye is useless the ear will be invaluable; and for this reason the spectrophone must ever remain an adjunct to the spectroscope, in addition to its having a wide and independent field of usefulness in the investigation of absorption spectra in the ultra red.

THE KEELEY MOTOR.—There are few at the present time acquainted with the higher walks of mechanism who have not heard of the Keeley Motor. Now, what this motor is no person seems to know; what it proposes to do after it has once been brought to a state of completion is really invaluable, *inter alia*, from the charming simplicity with which its claims are put forth—to get an enormous amount of mechanical power from nothing, or at any rate from nothing at all worth speaking of; for instance, a glassful of water to drive a railway train for over 100 miles. Keeley was confident of his being able to solve the problem, and the stock-holders and stock-dealers equally confident that there was something in it. It is true that it has long been the standing ridicule of mechanics of the every-day school, and for several years reputable journals, such as the Scientific American, have always linked the word "deception" to the usual title of the inchoate power; but what more easy than to persuade moneyed speculators that all great and new discoveries are subject to detraction? Accordingly money has flowed in plentifully until recently, when stockholders began to demand that they must see something, plenty of time having surely elapsed since first the stock was thrown into the market. But as Mr. Keeley retained the secret in his own hands, he was master of the situation, and if they would not advance more money it would be their own loss, as his invention was now almost perfected. A first public exhibition of the Keeley engine was, however, determined upon, and was given in Philadelphia on April 22 in presence of a large body of New York men, among whom are some of fairly high social and political standing, but none whose names are recognised as belonging to the world of practical mechanics When the visitors were seated they saw before them a well-polished steel machine composed of tubes and globes. Like a scene connected with conjuring apparatus, the first act consisted in removing every cock and tube, ostensibly to show that the apparatus was empty. Lights were placed underneath, and the visitors were invited to look into and through the various chambers. The performance then commenced by one of the company pouring a glass of water into half-a-dozen funnel-topped tubes, and in exactly 29 seconds after the last drop went in a pressure was generated sufficient to raise a 6-ft. lever (1-in fulcrum), upon which were hung 700 lbs. weight. The pressure was asserted to be 15,000 lbs. to the square inch. Pausing for a moment, I may remark that innumerable Englishmen, and also numerous Americans, are aware that a Geyser apparatus is, and has for years been, in London an article of commerce; by means of which cold water poured into a reservoir at the top emerges, after a few seconds, from a faucet at the bottom heated to the boiling point. But perhaps Mr. Keeley's visitors on the occasion referred to were not quite aware of what takes place when a drop of water is allowed to come into contact with a hot metallic surface. The vapour said to create the pressure, in the experiment now being described, was then passed into a steel cylinder about 30 in. long, by 5 in. in diameter, through the centre of which was stretched an ordinary piece of piano wire, and, by means of some mysterious influence exerted by a kind of mammoth tuning fork was said to be vivified by its vibrations. This vapour was then conveyed to the engine in another room, to which all the visitors were then invited to move. Here was placed an engine, or piece of mechanism, that at present must be considered as indescribable. After the opening of some cocks, something that was termed a spirophone, contained in one of the cylinders, or rather drums, of the mechanism, began to roar, and a shaft connected with it began to revolve rapidly. The rapidity of the revolutions of the engine were controlled by Mr. Keeley striking an iron disc or drawing a bow over a tightly stretched steel wire. Now, what does all this pretty piece of mechanical leger-demain amount to? will be the enquiry of the sober, common-sense

mechanic. The writer has sought to obtain at head-quarters in New York some reliable information concerning this alleged new power, but has thus far quite failed in being able to accord it a position of reliability or genuineness, notwithstanding that Commander Gorringe and others speak of what they saw as perfectly wonderful.

NEW AMMONIA ENGINE.—Different altogether from the motor just spoken of is a low temperature motor, into which a somewhat searching examination has just been made by the chief engineer of the Navy Department of the United States of America. This differs *ab initio* from the Keeley Motor, in that there is no alleged mystery, everything being explainable on scientific principles. Originating in a machine in which ammonia was used as a means of producing ice, experiments have led to the discovery of a motor which when completed will, it is stated, prove of inestimable value. Ammonia being converted into gas under high pressure at ordinary temperature has about three times the expansive force of steam. While water requires to be subjected to a high degree of heat ere its powers can be put forth, ammonia, on the contrary, puts forth its power at an ordinary temperature. The difficulty heretofore has been to get the ammoniacal gas condensed after it has operated on the end of a piston. It is now believed by Chief Engineer Isherwood, who is acting in this matter with Prof. John Gamgee, that this difficulty has been overcome. In the new ammonia engine there is a high-pressure boiler where the ammonia is converted into gas by the heat in water of ordinary atmospheric temperature, and a low-pressure boiler, in which ammonia is kept at a considerably less tension than in the other, and with which the engine is operated. After doing its work the cooled and shrunken gas and liquid are discharged by an ejector worked by the higher pressure in the high-pressure boiler. This excess of ammonia in the liquid form is pumped from the low-pressure back to the high-pressure boiler, while the excess of heat is continually being converted into the mechanical work done by the engine. The high character of the men engaged in working out this idea, and the open manner in which they state the whole principles upon which every action is based, prove to some extent a guarantee of the possibility of something valuable being eventually achieved by its agency, for, unlike the Keeley Motor, there is in the ammonia motor no secrecy as regards either principle or mode of action.

SOLAR ENGINE.—The following description of a solar engine is given by Mr. G. F. Rodwell, in his report of the meeting of the French Association for the Advancement of Science, at Algiers, in Nature:—"In the Agricultural Exhibition one of the most interesting machines is the solar engine, the boiler of which is placed in the axis of a mirror 14 ft. in diameter, and formed of three portions of hollow truncated cones, so as to get a close approximation to the parabola. When the sun shines a pressure of from three to four atmospheres is produced in the boiler, and a force of one horse-power is produced through the intervention of an ordinary steam-engine. The mirror is of silvered copper; the boiler is blackened and is surrounded by a glass cylinder, which, of course, permits the passage of the sun's heat through it, but obtructs it escape after absorption. The whole thing co ts 4000 frs., and it could be used in many countries for at least 200 days in the year.

THE AMERICAN CENSUS AND THE IRON TRADE.—A most interesting preliminary report as to the condition of the iron trade has just been issued, founded upon the exhaustive enquiries made in connection with the United States Census. It appears that the total number of iron-making establishments, including blast-furnaces, steelworks, Bessemer converters, rolling and puddling mills, were as follows:—Blast-furnace establishments—1870, 386; 1880, 490. Blast-furnaces—1870, 574; 1880, 681. Rolling mill establishments—1870, 310; 1880, 324. Steelworks—1870, 82; 1880, 118. The percentage of increase in the 10 years in the total of iron and steel works was 24·38, but this does not take into consideration that the size and capacity were generally much greater in 1880 than in 1870. The capital invested in these industries was $230,671,884 in 1880, against $121,772,074 in 1870, or an increase of 89·68 per cent. The production of iron and steel of all kinds was 7,265,140 tons in 1880, against 3,655,215 in 1870, or an increase of 98·76 per cent. Under this head the Bessemer steel products show the most astonishing development, being 889,896 tons in 1880, against 19,403 in 1870, an increase of 4486 per cent. The geographical distribution of the iron trade in the United States has also considerably extended, 25 States having been engaged in the manufacture in 1870, while 30 are now occupied with it; the new areas being Colorado, Kansas, Nebraska States, and the two Territories of Utah and Wyoming. Pennsylvania, as usual, stands at the head of the iron-making States, with a production of 3 616,668 tons for 1880, being about 49 per cent. of the whole American production. A curious addition to the Census information has been the calculation of the geographical centre of production, which is defined as the point at which equilibrium would be reached, were the country taken as a plane surface, itself without weight, but capable of sustaining weight, and loaded with its production of iron and steel, each ton exerting pressure on the pivoted point directly proportioned to its distance therefrom. This point was found to be at 40° 43′ N. latitude, and 79° 20′ longitude W. from Greenwich, the locality being in the State of Pennsylvania, on the boundary line between Armstrong and Indiana counties. It is somewhat singular, however, that at this locality iron has never been manufactured in any form whatever.

FOREIGN MINING AND METALLURGY

The general aspect of the Belgian iron trade is not particularly encouraging, and complaints are heard on various sides as to the course of affairs. Orders continue to flow in, but the terms offered are altogether unacceptable. The fall in the price of English pig has, of course, not been without its influence. There has been no change in the price of iron upon the Belgian markets, and no reduction is anticipated so long as contracts now in course of execution are not worked out. Transactions in plates at 7*l.* per ton begin to become scare, and prices appear to be tending in the direction of 6*l.* 16s. per ton rather than otherwise. An international exhibition of machinery and tools is to be held at Liége on July 24, 25, and 26. The Belgian Minister of Finance has given orders that exhibits for this gathering are to be admitted free of Customs duty. A reduction of fares is also to be made on the Belgian State Railways in favour of visitors to the exhibition. A committee of the Belgian Chamber of Representatives has officially reported on the condition of the iron and steel trades of Belgium. The committee strongly urge the importance of cheap means of transport.

The intelligence available with respect to the Belgian coal trade is very scanty, the dead season being, in fact, at its height. Prices have, however, been pretty well sustained. The tone of the market is not very brilliant, transactions not being particularly numerous. Still quotations have shown firmness. The maintenance of prices has, perhaps, been assisted a little by the return of colder weather, but notwithstanding this coal for domestic purposes has been in comparatively limited demand, and stocks have been accumulating at the pits' mouth. This, however, is usually witnessed at this period of the year. The German coal trade has remained in an extremely quiet state. Upon the whole, the tone of the market has been depressed. Most of the collieries are only indifferently employed, and the extraction is being reduced in consequence. The production of coke has been in excess of the consumption of late.

There is little news to communicate with respect to the French iron trade. Prices have been supported with considerable firmness, but there has been an absence of the upward movement which had been anticipated in prices. The Northern and Eastern Company has decided on annexing steelworks to its establishment at Valenciennes. The production of pig in the Grand Duchy of Luxembourg in 1879 is officially estimated at 261,236 tons as compared with 248,377 tons in 1878, and 215,388 tons in 1877. The number of furnaces in operation in 1879 was 12 as compared with 12 and 8 respectively. The movement of coal over the Paris, Lyons and Mediterranean Railway exaibited an increase of 650,000 tons last year as compared with 1879. The additions made to the rolling stock of the Western of France Railway last year comprised 29 locomotives, 6 passenger carriages, and 918 trucks of all kinds. Some considerable further additions will be made to the company's rolling stock this year, large new orders having been given out. The German iron trade has shown some depression, English competition having made itself felt. There has been a slight recoil in the price of casting pig and Bessemer pig upon the German markets, and it has been the same with various qualities of iron, although prices have experienced no material change. The German steelworks are well employed upon orders which will occupy them until the close of this year. Orders for steel rails have just been taken in Germany at 8*l.* per ton.

The managers of the Pennsylvania coal companies apparently still think it advisable to resort to a restriction of the output in order to maintain prices. We learn from the Philadelphia Public Ledger that at the end of April an agreement for regulating the output during the whole of the current month was arrived at. It is estimated that the diminution of stocks will at the end of the month be sufficient to permit regular work to be carried on for a considerable time after. Work is to be suspended for three days in each of the last three weeks in May. An advance of prices at the beginning of June is considered to be very probable. Prices at present are said to be only barely remunerative, and they have been brought up to the present level solely by the policy of restricting work adopted during last year. The output this year still shows a noteworthy increase against last year, notwithstanding that short time has been repeatedly adopted. The total output of anthracite coal to April 23, to which date the statistics extend, was 7,308,307 tons or 840,952 tons more than on the corresponding date last year. The total output of bituminous coal was 1,396,410 tons, showing an increase of 293,751 tons.

Meetings of Public Companies.

THE INDIAN GOLD MINES COMPANY.

An extraordinary general meeting of shareholders was held, on Tuesday, in the Accountants' Hall Glasgow, to receive and consider the report of the directors and Chairman; to receive report of agreement with the Devalah Central Gold Mines Company (Limited) for settlement of disputed questions; and to consider and, if approved of, pass a special resolution authorising the creation of additional capital. There was a good attendance. Sir W. CUNINGHAME, Bart., presided, and seated at the table along with him were Mr. Ferguson, London; Mr. John Wilson, Hillhead House; Mr. M'Ilraith, London; Mr. J. C. Cunninghame, of Craigends; and Mr. Wm. Anderson, C.A., Glasgow. Apologies were announced from Lord Claud Hamilton, M.P., one of the directors, and Mr. Wyllie Guild, the secretary.

The reports by the directors and by the Chairman were held as read. The directors said they had much pleasure in submitting to the shareholders the report by their Chairman, Sir William Cuninghame, detailing the result of his recent visit to the company's property in India, and his opinion as to the prospects and value of the mining rights which had been secured. The time and labour which the Chairman had bestowed on the company's affairs, at considerable personal inconvenience, were deserving of the best thanks of the shareholders, as it would have been otherwise impossible for the directors to have obtained, in a satisfactory manner, a definite arrangement with the Rajah of Nellambore, and valid titles to the several leases embraced in the original agreement with the vendors. The delay, which had been unavoidably entailed by these negociations, had prevented an earlier completion of the preliminary works, and the erection of the crushing mill and relative machinery; but, as all the materials were now on the ground, and the fitting up of the mill being rapidly pushed on, the directors were in hopes that a practical test of the value of the property would be obtained at an early date. The arrangements with the Rajah of Nellambore and the Wynaad Prospecting Company rendered it necessary to create additional capital; and in view of the requirements, and the further requisite expenditure in the development of the properties, the directors proposed to recommend an issue of additional shares, amount and terms of issue to be submitted to the shareholders for their consideration. The company would, with this additional capital, have the means at their command of carrying out all necessary explorations and providing the requisite machinery for fully securing the valuable mineral deposits which the directors believe exist in the property of the company. The last letters from Mr. Severn gave a detailed account of his operations, from which the directors were glad to see that all the works were being pushed on with energy, and that he confidently anticipated satisfactory results at an early date. A telegram had been received from the company's solicitors in Madras, intimating that the agreement carrying out the arrangements with the Rajah of Nellambore, &c., had been signed. In the course of his report, Sir Wm. Cuninghame, the Chairman of the company, said:—"Although I am somewhat averse to express any public or semi-public opinion on such an important matter as the prospects of gold mining in India, I feel that the shareholders of the Indian Gold Mines Company (Limited) may reasonably expect from me some account of their property on my return from visiting it, and I should be sorry to fall short of their wishes. In dealing with the subject I wish to avoid speaking of other companies in which we have no interest, and consider when I say I think favourably of our own prospects and of the prospects of the Devalah Central, Alpha, and Prince of Wales Companies, that is all the shareholders wish to know. The Devalah Central is a fine large property. The Alpha and Prince of Wales are small, but as the capital required to work them is also small there is a good chance (in my opinion) of remunerative results. I found, after a careful inspection of the company's property, and after passing some weeks in the district, that all we have been told of the auriferous character of the locality is strictly correct; in fact it seems to me that the representations made on that subject have been rather under than over stated. The gold-bearing area is greater than I expected to find, as over a large tract of country there are evidences of quartz reefs having been worked, and the indications of the operations of ancient miners are both more numerous and more extensive than was held out. The first fact strengthens the probability of the quartz reefs going down to great depths; the latter proves as I take it that the reefs were very generally of a rich character. The question, as the shareholders I hope understand, is one of depth. There is no doubt whatever about the ore on the surface, samples giving a good return may be got almost anywhere; but that does not amount to much, as no one can say to what depth such surface outcrops extend. Although we cannot tell for certain, as yet, whether the reefs go down, we have some good indications that lead us to expect that such is the case. Wright's level on the Alpha property, undoubtedly goes down, and latterly some quartz leaders have been cut on our tunnel road, and near the entrance of our drive, at a great depth below the level of the country. Of this promising district the Indian Gold Mines Company possess the best part, and of that best part a very large area. Our property under the new arrangement with the Rajah of Nellambore will be 4 or 5 miles long, showing everywhere indications of reefs. We possess, under an agreement with the Alpha Company, a share of the returns of Wright's level, and a valuable property I have little doubt it will prove; but it is not because we have this share that I think our position good, but because in so large an estate we have a chance of finding many reefs as good as that lode. We may be disappointed in some places, but we ought, it seems to me, to succeed somewhere." Sir William went on to give details with regard to the company's titles and other matters, and referring generally to the arrangements that had been made, &c., expressed the belief that they were much to the company's advantage. In conclusion, he said—"The new acquisitions have consolidated the property of the company, the whole area from the western boundary of the Alpha to the eastern boundary of the Bear being now in our hands (except a small piece, say, 40 acres, marked 'Withers'), together with a right of way to the Seeputtee property, with unrestricted mining and surface rights in every part, and without (as far as I see) any possibility of dispute or difficulty with anyone in the future. When it is remembered that the area in question is the best part of the Wynaad gold district, it seems to me the company is eminently fortunate in having secured so valuable and satisfactory a position. If the arrangements made are accepted and confirmed by the shareholders there is a straight course before us, and nothing remains except to organise our establishment so that the work may be economically and efficiently carried on."

The CHAIRMAN, in the course of a long speech, detailed the present position of the company. While admitting that the outlook was very promising, he said they had yet many difficulties to contend with. The latest information from their representative in India was contained in the following telegram:—"Steady trial crushings begin Thurday. Opened up Wright's road, four places. Very fine reef, 11 ft. thick. Found it on tunnel road." He moved the adoption of the reports.——The motion was seconded by Mr. JOHN WILSON, and adopted.

The CHAIRMAN next moved that the agreement with the Devalah Central Gold Mines Company (Limited) for settlement of disputed questions, dated Oct. 28, 1880, be approved of. He explained that the effect of the compromise that had been effected was that they had received a certain number of shares in the Devalah Company, and in return therefor had given up all claims to such portions of that company's ground as lay within the limits of the Indian Gold Mines Company's property.——Mr. FERGUSON, London, seconded, and the motion was adopted.

The CHAIRMAN next proposed that the shareholders approve of the agreement with the Wynaad Prospecting Company, and that provision be made for the issue of 732 shares of 10*l.* each, fully paid-up, to that company in implement of the agreement. He explained that the capital issued by the Indian Gold Mines Company represented 48,450*l.*, or 4845 shares of 10*l.* The expenses, inclusive of the original outlay of 20,000*l.* had amounted, roughly speaking, to 40,817*l.* 5s. 7d., which left a balance of only some 7632*l.* Of that balance, 6000*l.* had been remitted to the Rajah of Nellambore. Some means of getting more funds must be adopted if operations were to be carried on, and at the next annual general meeting the directors would ask to be authorised to increase the capital of the company to the extent of 60,000*l.*, making the total capital 110,000*l.*, by the creation and issue of 6000 new shares of 10*l.* each—one new share to be offered at par to every holder of every existing share, according to the number of shares he holds at present; and any shares not accepted, and those remaining in the hands of the company, to be disposed of by the directors in such a manner as they think most beneficial to the company. However, they did not ask any such power just now.——Mr. WM. ANDERSON seconded the motion, which was adopted.

In answer to Rev. Dr. F. L. ROBERTSON, who enquired when the directors proposed to obtain a Stock Exchange quotation for the shares of the company, the CHAIRMAN said the directors would do so as soon as possible. Until the company got into smoother water the services of Mr. J. Wyllie Guild could not well be dispensed with, but Mr. Guild himself was most anxious that a quotation should be secured, and he would retire as soon as the directors felt they could dispense with his services. According to the rules of the Glasgow Stock Exchange no company could get a quotation if its secretary was a stockbroker and a member of the Exchange. Quotation on the London Stock Exchange they were unable to get in consequence of their not having publicly advertised the company when it was floated.

On the motion of Sir JAMES WATSON, a hearty vote of thanks was awarded to Sir W. Cuninghame for his services to the company, and the meeting dispersed.

NERBUDDA COAL AND IRON COMPANY.

The twenty-first ordinary general meeting of shareholders was held at the offices of the company, Finsbury-circus, on Tuesday,

Mr. SAMUEL J. WILDE in the chair.

Mr. FRED. R. BLUETT (the secretary) read the notice convening the meeting. The reports and accounts were taken as read.

The CHAIRMAN said, with the two very full reports from the manager and Government Inspector, which had been sent to the shareholders, and having received no recent intelligence, he would only detain them a very few minutes, unless the shareholders wished to ask any questions. He thought they would agree with him that both the reports were extremely satisfactory. The directors had hoped to have received some further information about the boring at the Georgina pit; but the last mail did not bring them any report, and they knew nothing more than what had already been stated in the report. At the date of the last advices the pit had been sunk 293 ft., and, judging from the amount of work done previously, it had probably been sunk a further distance of 50 ft. since that date, making about 340 ft. They had hoped to have met the coal before this, but they were still in the coal measures. Bearing on this point he had received a letter from an engineer on the Bombay and Baroda Railway, who had recently visited the property advising that the development should be continued more rapidly, for at the present rate of progress he considered that two years must elapse before they would receive much benefit from the shaft-sinking. In reply to this he (the Chairman) would state that the directors were pushing the work forward vigorously. In consequence of what was said by the Indian shareholders some three years ago they sent out a drilling machine to expedite the matter of sinking the shaft, but this machine, owing probably to some prejudice among the people there, had not yet been used. An employee of the company, however, had recently been on a visit to this country, had seen several of Col. Beaumont's machines at work, and had gone back to India thoroughly competent to work the machine sent out. The machine would, no doubt, be used in the Helen pit, but he did not know that it would be worth while to use it in the Georgina pit, as they had got through the hard conglomerate there. He thought that in mining particularly they should think well before commencing a new work, but that once having began they should push it on with all the vigour possible, almost regardless of the cost. In this case everything possible was being done; but it could not be expected that as much progress would be made in India as if the property were in England. With regard to the remarks of the auditor in calling attention to the subject of valuation, this was merely a question of book-keeping. When some four or five years ago, in Mr. Maynard's time, a separation was made between the mine property and the block and plant, Mr. Maynard, unknown to the directors at that time, though he afterwards told them, put too high a value upon the block and plant, because he thought that if the property were sold they would get more for it, as if people would buy simply on the vender's valuation. Under these circumstances they had simply done what would have been done had Mr. Maynard made a proper valuation at that time. With regard to anything like depreciation, to which the auditors called attention, he had had the figures taken out from the commencement of the company 20 years ago, and he found that they had received from capital 108,300*l.*, and from the sale of coal 126,600*l.* Out of this amount only 15,190*l.* had been paid in dividends, the other part of the profit on the sales having been applied in aid of the capital; and, therefore, in his opinion, capital was not overburdened as between capital and revenue. Of course, when the company was first started it was believed that the Great Indian Peninsula Railway would be finished in two years, whereas it took 12 years to complete it; and, therefore, a good deal was rolled up against capital for which there was nothing to show. Before any coal was obtained from No. 2 pit, from which they had lately been getting the coal, nearly 5000*l.* was spent upon it out of revenue, and the new winning pit in the same manner had had the benefit of 3400*l.* Therefore, he thought they had very fairly—or, as some of the shareholders thought, very unfairly—charged revenue in aid of capital. He had always been an advocate for dividing the expenditure properly and fairly between capital and revenue, always charging it to revenue when there was any doubt on the matter. No doubt, when the company begins to pay dividends again something would be written off in some shape or other. He then moved the adoption of the reports and statement of accounts.——Mr. JAMES R. CORBETT seconded the motion.

Mr. H. D. BROWNE thought that as long as the company was in the present condition of dividing nothing it was of secondary importance to consider what should be put to capital and what to revenue. He suggested that in next year's revenue account the expenditure of the previous year should be shown, and that a similar statement should appear in reference to the output, this information being especially desirable for the sake of new shareholders. The matter of the highest importance to them was the sinking of the Georgina pit, which had been sunk 189 ft. from the bottom of the shaft. He thought the reports very satisfactory. They must be patient, and be prepared to pay another call if necessary. Unless all the gentleman who had reported on the property were wrong in all their opinions they would have very good results by waiting patiently for a few years.

The CHAIRMAN said the fact that the coal had not yet been met with in the Georgina pit was probably due to a fault or to the fact that the coal had taken a great dip. He might state that the gentleman from whose letter he had quoted had since his visit to the property bought more than 1000 shares.

Mr. NEWBERRY asked if the directors had any knowledge of the price paid by the Great Indian Peninsular Company to the Indian Government for their coals?——The CHAIRMAN replied that they paid the Government more than they paid this company. The directors had tried to get better prices, but it was said that their coal was not so good as the East Indian coal, and that they would be prepared to pay higher prices if the company could give them a large supply. Unfortunately the Indian Government never promoted private enterprise, but, on the contrary, did all they could to oppose it.

A SHAREHOLDER asked whether the directors had considered the advisability of making a call?——The CHAIRMAN, in reply, said the company had never stood still for money. They did not care about calling less than 2s. 6d. per share, which produced 5000*l.*, and while they could borrow 1000*l.* or 2000*l.* on easy terms from the bankers he did not think it worth while making a call. When the last calls was made they owed the bankers 4500*l.*, but they now only owed 1000*l.* The company had been unfortunate in its managers, but it now had a very good one. They had been still more unfortunate in regard to fire, a second fire having broken out a few years ago. The present manager was of opinion that this was a continuation of the original fire, the fire having worked through a thin seam of coal; but this had, of course, consumed a large amount of the coal. There had been considerable dips in the coal, and in the No. 2 pit the dip had been so great that it was almost a question sometimes whether it was worth while to get the coal out there. The Helen pit would be much nearer to the No. 2 shaft.

The reports and accounts were then unanimously adopted.

Mr. T. S. HAVISIDE proposed the re-election of the retiring directors, Messrs S. J. Wilde, and J. R. Manning.——Mr. BROWNE seconded the proposition, which was carried.

The CHAIRMAN, in returning thanks, said Mr. Manning was now in Ceylon, and would probably visit Nerbudda on his way home, so that they would have the latest information from a gentleman who had a previous knowledge of the property.

On the motion of Mr. CALDWELL, seconded by Mr. BLYTH, the auditor, Messrs. J. Waddell and Co., were re-appointed.

On the motion of Mr. BROWNE, seconded by Mr. NEWBERRY, a vote of thanks was passed to the Chairman and directors, and the meeting then closed.

NEW KITTY MINE COMPANY

The four-monthly meeting of shareholders was held at the offices, Walbrook, on Tuesday (Mr. J. B. REYNOLDS in the chair), for the reception of accounts and other general business.

Mr. FREDK. J. HARVEY (the secretary) read the notice calling the meeting

The accounts, which were also read by Mr. HARVEY, were as follows:—

BALANCE SHEET FROM JAN. 22, 1881, TO MAY 16, 1881.—Receipts: To balance from last account, 34*l.* 6s. 1d.; call made Jan. 25, 1881, 2s. per share, on the 6000 shares of the company, 600*l.*; discount, 6*l.* 3s. 8d.=640*l.* 9s. 9d.—Cost: Sixteen weeks' working, 452*l.* 17s. 3d.; merchants' bills, 130*l.* 14s. 6d.; minimum rents, 30*l.*; bankers' charges (commission), 2s. 1d.; balance of cash at bankers, 26*l.* 15s. 11d.=640*l.* 9s 9d. Balance of cash at bankers brought down, 26*l.* 15s. 11d. There are no liabilities due and unpaid, excepting minimum rent, not claimed, about 40*l.* [I hereby certify that I have compared the above balance-sheet with the cost-sheets and vouchers, and find the same correct.—J. ALEXANDER: May 17.]

The SECRETARY said that no doubt the shareholders would feel much obliged to Mr. Alexander for the trouble he had taken in examining and certifying the accounts.

The CHAIRMAN said: Gentlemen, it is with the utmost satisfaction that I meet you to-day. Notwithstanding the operations of the mine have been most seriously retarded during one of the most severe winters we have experienced in this country, the engine has been recently successfully started, and Captain Vivian will explain to you how long it will be before the engine-shaft will be entirely cleared of the water and rubbish which it contains. I am aware of the deep interest with which many of our shareholders view our present operations, and therefore I am the more anxious that they should know from time to time the exact position of affairs and the prospects of our undertaking. I cannot, if I would, conceal from myself the very advantageous position in which this company is placed. There can be no question that the discovery made in West Kitty goes to indicate the great value of New Kitty Mine, and it is almost impossible to judge as to the value of New Kitty apart from the progress of West Kitty. Those shareholders who visited New Kitty a short time since will bear me out when I say that for situation the mine can hardly be excelled. We are fortunate enough to have for surface operations all the facilities we can desire, and the engine, boiler, and pit-work which we purchased of New Charlotte turns out to be a very cheap bargain. It will be observed that we still successfully conduct our business without any credit from any quarter, and of course every liability is included in the balance-sheet, which is now before you, and, as usual, the calls are most promptly and

cheerfully responded to, not because the shareholders like being called upon to put their hands in their pockets, but because in this instance they see more than a reasonable probability of a return of at least five shillings for every shilling laid out. I think their expectations are reasonable expectations. Mining, we know, is at best a speculation, but probably in the St. Agnes district there is as little of that element as in any mining district we could name in this country. (Hear, hear.) With reference to the accounts, it will be a satisfaction to the shareholders to know that the manner in which they are kept by the secretary calls forth the warm approval, not only of those directly interested in the company, but also of the company's bankers. The thanks of the shareholders are also due to Messrs. Williams, Williams, and Grylls for the relief they afford by receiving the calls direct from the various shareholders. The bankers write me on the 11th to the effect that the calls are responded to in a remarkable manner, arising no doubt in great measure from the very explicit way in which the accounts are rendered. I take it that that compliment to the secretary, coming, as it does, from Messrs. Williams, Williams, and Grylls, is very significant. I know of no system which affords such guarantees for the proper management of the finance department as that adopted by New Kitty. (Cheers.) Next to the importance of having a really good and *bonâ fide* undertaking is, in my opinion, having officials who are above suspicion, and who are well known for their ability and integrity, and I am not in the slightest degree reflecting, directly or indirectly, on any other companies by comparison when I say that it is impossible for any officials to enjoy a better reputation all round than those employed by you. They are tried men, who have proved their title to confidence by many years of successful labour. The committee have, however, been very anxious to appreciate those efforts which are put forth by the officials in the company's interests, and this duty has been pressed upon them all the more from the fact that the demand for such gentlemen in mining circles is increasing every day. (Hear, hear.) Mr. Hancock the local purser, through whose hands cheques have to pass for the payment of accounts, and by whom all the accounts on the mine are kept, has at present four guineas per month, but the committee after careful deliberation recommend you to increase this to five guineas per month, and in consideration of the additional labour thrown on the manager in consequence of the increased business of the company, the committee recommend that his salary be increased to eight guineas. The increase will not be felt by the company, but I hope if agreed to it will show these gentlemen that you are not unmindful of those officials who are so anxious to promote your interests. If Capt. Vivian serves this company as he serves West Kitty, and I have no doubt he will do so, it will be found if New Kitty has anything like merits equal to that possessed by its prosperous neighbour that the results of your operations will be constantly agreeable surprises to you. (Cheers.) With reference to the cash account it will be seen that we have no debts whatever due and unpaid, except the small item of 40*l.* for rent, and considering the outlay which you have made before you have been enabled to avail yourselves of any returns it is hoped as this rent has not been applied for, that a part, if not the whole, may be given up. The special attention of the committee when on the mine was directed to No. 2 engine, at present the property of Messrs. Michell and Co., now on the mine, which was left there by the late Polbreen proprietors. No doubt we shall want such machinery, and if the owners can be induced to part with it on reasonable terms the committee suggest the propriety of your giving them power to effect a bargain, but to do this and to pay the costs for the next four months a call of 3s. per share will be necessary. I need scarcely remind you that a liberal policy will be the most profitable policy for you to adopt, and it is my conviction that every shilling you spend on this undertaking will be repaid you with very handsome interest, and if you wish to make your property stand well in the market show the public that you continue to believe in it by coming forward with such outlay as may be necessary to test its real merits. To play at mining may suit those whose object and whose belief is not in the direction of profits, but it will not suit you, gentlemen, who have a property in the heart of one of the most famous districts Cornwall has produced, and a property which at the present moment is being as economically and as quickly developed as it can be. I am happy to say that no further expense will be incurred for additional grants. The lords of the manor have been particularly courteous in giving us all we have asked for. Our requirements have been met, and so have theirs, and the relations between you and the lords of the manor are in every respect satisfactory; in fact, gentlemen, I have nothing but good news for you to-day, notwithstanding we cannot estimate the results of workings as far as the immediate future is concerned, but that I hope we shall be able to disclose before you are called together on the mine in September. Probably some one will want to know what we consider the intrinsic value of this property. That, gentlemen, is a question we cannot answer. We can only say that whatever profits are divided amongst the shareholders in this company will be divided amongst those, and those only, who have subscribed to the capital which will have brought the concern into a profitable condition, and judging from antecedents and present appearances, the capital upon which dividends will be paid, however large the dividends may be, is likely to be very small. I only hope, gentlemen, that your belief that you will soon be in very much improved circumstances will turn out to be a well grounded belief, and that instead of even the insignificant calls we have to make now we shall be in the receipt of profits, which I am sure will gladden our hearts none the less because we have waited for them. (Cheers.) In conclusion, the Chairman formally moved that the balance-sheet and vouchers now presented be adopted and passed.

Mr. S. COOK seconded the resolution.

The CHAIRMAN: The accounts which have been audited by Mr. Alexander are on the table, together with the bankers' book, and if the shareholders would like to look at them they are open to inspection. I shall be glad to answer any questions on the balance-sheet, which may be put.

The CHAIRMAN, having replied to a question from Mr. ALEXANDER with regard to a matter of detail, said—Well, gentlemen, I presume the balance-sheet is entirely satisfactory and clear to you, because you have no further question to ask about it. I, therefore, put the resolution—"That the balance-sheet and vouchers now presented be and are hereby adopted and passed."——The resolution was carried unanimously.

The CHAIRMAN: Gentlemen, I will now read the agent's report:—

May 16.—I beg to hand you the following report of this mine:—Since the meeting held Jan. 25 last we have completed the building of the engine-house and boiler-house. We have put in the engine and put down the pitwork, divided and cased the shaft, and put in the footway to the adit level. We started the engine to work on April 20. Since that date we have forked the water, and cleared the shaft about 10 fms. below the adit level, also divided and cased the same and put down the footway. I hope to have the mine cleared to the bottom in about a month or five weeks from the present time. I then purpose to sink the shaft to cut the Wheal Kitty and West Kitty great flat lode, as I have stated in my former reports. Considering the rich courses of tin that are at present being worked on at West Kitty, the adjoining mine east, and taking into account the very shallow depth that we shall have to sink in order to intersect this lode, I consider that our prospects of success are beyond doubt.—WILLIAM VIVIAN.

The CHAIRMAN continued: Gentlemen, that is one of the strongest reports I have ever known Capt. Vivian to write, and I assure you that those who know him as well as I do will bear me out when I say that we may reasonably receive that report with the greatest satisfaction. (Hear, hear.) Now I think it would be wise to take the conversation on the progress and prospects of the mine. If any shareholder wishes to ask questions on any point now is the time to do so.

Mr. G. M. BODDY asked whether they would be able to work any portion of the mine before the water was all out?

Capt. VIVIAN said they must get the water out first. They had to sink a shaft about 10 fms. to intersect the West Kitty lode after they got the water out, but there was a lode cut already in the cross-cut south of the shaft, and there had been tin raised, and from the reports given him by former workers he believed that when they get down in five or six weeks they would find tin there.

Capt. VIVIAN, in reply to a further question, said that the former workers knew nothing whatever about the champion lode.—Mr. G. M. BODDY: I suppose that independent of this champion lode there are other lodes?——Capt. VIVIAN said he had no doubt, from the reports of the old workers, that there were other lodes, and he hoped they would yield tin which would assist in paying the cost as soon as they got down.

Mr. G. M. BODDY: How far is the tin in West Kitty from this mine?——Capt. VIVIAN: The nearest point is about 80 fms.——A SHAREHOLDER: Is there anything between to interfere with the run of ore?——Capt. VIVIAN: No. There was a great cross-course between. Some 10 or 12 parallel lodes were being worked upon in the district within a mile, and nearly all these lodes had been productive. Looking at all the surroundings and circumstances of the mine, he considered this undertaking to be of more than an ordinary character. (Cheers.) He drew attention to the fact that in Wheal Kitty, in the 60, they reported the lode worth 20*l.* per fathom. He had no reason to doubt that in New Kitty they would have a good mine, the same as in West Kitty.

Mr. PAYNE: Then you think that in about a month or six weeks you will fork the water to the bottom.——Capt. VIVIAN: Yes.——Mr. PAYNE: And in about 10 or 12 fms. sinking you expect to intersect the lode.——Capt. VIVIAN: Yes.

Mr. PAYNE said he thought this information must be very satisfactory to the shareholders. (Hear, hear.) If the work were done in that time the shareholders would have reason to congratulate themselves upon the prospect before them. Those who had visited the district and gone over the property, as he had done, must have very great faith in the mine. He had been down several times, and the more he saw of the district the greater was his confidence in it, and he believed the prospects of the mine were thoroughly good. As regarded financial matters, he thought the shareholders also had good reason to be satisfied. There was no credit system, and what they lost, if they lost at all, would be lost honestly and properly. (Hear, hear.) He had great pleasure in being present at this meeting, and was most gratified to hear that the prospects were so good. (Hear, hear.)

Capt. VIVIAN, in reply to Mr. G. M. BODDY, said there was no doubt they would start returning tin as soon as the water was out.——Mr. G. M. BODDY: Was the mine left rich by the old workers?——Capt. VIVIAN said he did not suppose the old workers left it very rich, but it must be borne in mind that at the time the mine was abandoned tin was selling at 35*l.* per ton, and possibly it did not pay to keep on at that price. But now they were getting 54*l.* 10s. per ton, which was very different to 35*l.*

The CHAIRMAN said it was important to remember that when this mine stopped working 40 years ago the Wheal Kitty was not known; all that had been a new discovery since the suspension, and it was a very important consideration to be kept in view that this district had never produced one failure.

Capt. VIVIAN: That is on this lode.——The CHAIRMAN: That is on this lode. There is another important point to be kept in view. As far as we can see at present the ground in West Kitty seems to get richer as they work up.

Capt. VIVIAN said that was the case. They would get the Wheal Kitty lode at about 10 fms. below the adit level. At West Kitty they got it at about 72 fms. below the adit level. They were working up and had gone about 15 fms. above the 72, and as they went up the better the lode was, and he had no doubt they would cut it at shallow depth, and if it improved as it went up it would make it look better. He thought they might safely calculate upon a rich lode in the present shaft at the end of the present year. (Hear, hear.)

A SHAREHOLDER: Is the ground favourable for sinking?——Capt. VIVIAN: It is hardish ground. We pay 18*l.* to 20*l.* per fathom for sinking.

A SHAREHOLDER: What size is the lode: Capt. VIVIAN: It is 6 ft. wide in places at the back of the 60.

The SHAREHOLDER: What is called tolerably good stuff?——Capt. VIVIAN: Yes. It is tolerably unleavened the various points in West Kitty.

Mr. PAYNE said he had great pleasure in moving that a call of 3s. per share be made, payable at the company's bankers, Messrs. Williams, Williams, and Grylls, on or before Friday, the 3rd June next. He pointed out that they must have funds to carry on the workings till there were returns of tin, and it might also be found desirable to purchase the second engine, which was already on the spot.——Mr. H. W. BODDY seconded the resolution, which was put and carried unanimously.

Mr. G. M. BODDY moved a resolution to the effect that the shareholders wished to record their sense of their obligation to Mr. Harvey, the secretary, and the other officials, and that the salary of Mr. Harvey be five guineas per month, that of Capt. Vivian eight guineas per month, and that of Mr. Hancock (the purser) five guineas per month.——Mr. S. COOK seconded the motion, which was carried unanimously.

Mr. H. W. BODDY moved that the thanks of the shareholders be presented to the committee of management for their services during the past four months, and that they be re-elected. He thought the shareholders had every reason to be satisfied with the way in which their affairs were managed.——Mr. PAYNE: I have great pleasure in seconding that. I think we are all thoroughly satisfied with the information which the committee have given us. They are very anxious to do their business in a thorough and proper manner and to the satisfaction of the shareholders. (Hear, hear.)——The resolution was put and carried unanimously.

The CHAIRMAN: The next resolution is with reference to the purchase of the engine, if it can be obtained upon advantageous terms. We are not anxious to get the engine. We think it desirable to get it, and so all the gentlemen thought who visited the mine at the time our present engine started. At the same time we have water-stamps as soon as we get tin, which we hope will be shortly; therefore, we are independent of the second engine at present. They ask 400*l.* for it; that we shall not give—we shall not think of it at that price. We bought our present engine, boiler, and pitwork for 250*l.*, and it is scarcely likely that we are going to give them 400*l.* for an engine and boiler alone. However, I think you will be safe in leaving it in the hands of the committee. Of course, it is worth more to us than to anybody else, for it stands in our engine-house, and we do not care to have it taken down and taken away if they will be reasonable as to terms. (Hear, hear.)

On the motion of Mr. PAYNE, seconded by Mr. S. COOK, a resolution was then passed authorising the committee to make the best possible arrangement for the purchase of the second engine.

The CHAIRMAN: I am very much obliged to you for your attendance here to-day. It is very good of you to come. Meetings are not very popular; but this is better attended than the last, and I have no doubt that as our prospects brighten the meetings will continue to be better attended, and I hope interest will be excited in your minds so that you may come again, and if you know of any shareholders encourage them to come likewise, and look into their own affairs, and by-and-bye, when you arrive at success, which I believe you will, you will feel all the more gratified because you helped to attain that success. (Hear.)

Mr. PAYNE: I beg to propose a cordial vote of thanks to our Chairman, Mr. Reynolds, for the perseverance, energy, and vigour he has displayed. I am sure the more we know him the better we like him. (Hear, hear.) I have great pleasure in proposing that motion.——Mr. BOOTH said it afforded him great pleasure to second the resolution. He said this was the first meeting he had attended, and he had been much gratified with the statements he had heard. He could only hope that the results would be such as they had been led to anticipate. Capt. Vivian was not a sanguine man, and probably he was all the wiser for that. Capt. Vivian had stated they had a good property, and by the end of the year they would probably have returns. There was every reason to believe they had a good *bonâ fide* property, and he hoped the result would show that such was the case. (Cheers.)

The resolution was put and carried.

The CHAIRMAN acknowledged the compliment, and said that if any shareholders wanted information all they had to do was to call at the office, and it would be furnished to the fullest extent.——The meeting then broke up.

DEVON FRIENDSHIP MINING COMPANY.

The adjourned statutory meeting of shareholders was held at the offices of the company, Austin Friars, on Thursday,

Mr. J. H. MURCHISON, F.R.G.S. (the Chairman), presiding.

The notice calling the meeting was read by Mr. J. H. A. SMITH, the secretary.

Mr. SMITH also read the following report from Captain Charles Thomas:—

May 17.—The adit end is driven 26 fms. east of Lanyon's shaft, and is now about 24 fms. below the surface; the lode in the end is considerably improved in the last 5 fms. driving, and is now 5 ft. wide, producing 5 tons of good mundic per fathom, and some good stones of yellow copper ore. The stopes above the adit level are producing the usual quantities of mundic. We fully expect to complete arrangements for the new water-wheel before the shareholders' meeting takes place on Thursday. A very good second-hand Robey engine, steam capstan and cast-iron beam are on the mine, and will immediately be placed in position over Bennett's shaft. The wheel-pit and discharging conduit are complete, and we have had the ground levelled for the flat-rods. A large quantity of 3¼ in. flat-rods are on the mine, and we shall commence erecting stands at once. The new stack at the arsenic works will be finished this week, weather permitting. We are now preparing the shears and shaft tackle for Bennett's shaft. We expect to raise 50 tons of arsenic and 2 tons of tin per month until the water is forked to the 30, and then we shall be in a position to double the returns. The small amount of work we have been enabled to do at the adit and above is producing very satisfactory results. The lode in the adit end is very promising, and I have every reason to suppose that Bennett's lode will, on being developed, open out a fine mineral property.—CHARLES THOMAS.

The CHAIRMAN said this was the adjourned general meeting, of what was usually called the statutory meeting, which was required by Act of Parliament to be held within four months of the registration of a company. From the report which they had just heard read, considering that this meeting was held in so short a time since the registration of the company, and within two or three months from the time that the company really took possession of the property, he thought they would agree with him in considering that the results, so far, had been satisfactory. (Hear, hear.) It was not often that at statutory meetings the directors had to report that so much work had been done, or so much tangible return for the work which had been done. The company had already sold 1000*l.* worth of returns. The arsenic which had been sold was crude and not refined arsenic, consequently so ready a market was not found for it, and it did not fetch so high a price. They would go on returning about 50 tons of arsenic a month, and in a few weeks they would have 8 tons of tin for sale. The returns had given a fair profit. These returns did not come from the workings underground, unless they excepted the adit, which was 18 fms. from the surface; but the main resources had been obtained from the stuff at surface—from the great mass of halvans left by the old company. The directors intended to take steps to erect a refinery to refine the arsenic, which would enable them to obtain a better price and sell it more readily than at present. The estimated cost of the refinery was 500*l.*; the extra cost of refining would be about 12s. per ton; but as they would obtain several pounds per ton more for refined arsenic than crude, he need not say that the expense which they would go to in erecting the refinery would soon be met by the increased price and profit which they would get for the arsenic. (Hear, hear.) The wheel, which was 10 ft. breast and 40 ft. diameter, was expected to be at work in about eight weeks, and in about three weeks after that time they expected to be in the 30 fm. level, and then the present returns would be doubled; but they would also soon make valuable discoveries of copper ore. In former times this ore was famous as being of high quality, and, therefore, low prices did not affect results so much. In driving the adit level, the lode produces 5 tons of good mundic per fathom, mixed with rich copper ore. This mundic was really what produced the arsenic. In the next place, there was an old Cornish saying, that "Mundic rides a good horse," and if such were the case, and if they had a good run of mundic, he thought Capt. Thomas was justified in concluding that under the mundic they would find good copper ore. But they must remember that the mine was rich in copper in former days, not from the south but from the north lode. To Bennett's lode they drove a cross-course 170 fms., and they must have had a high opinion of the lode to induce them to undertake so long a cross-cut, and they did find the lode rich, which was the mainstay of the mine for some years. They were going to work Bennett's shaft which was sunk on the Bennett's lode. The company had obtained the grant of the South Friendship Mine, and they had the wheel pit ready there, and they would use the powerful water power which existed at the mine. So they would have the great advantage of working the mine by water power instead of steam as originally anticipated. (Hear, hear.) They all knew what had been said with respect to the prospects of the mine, and there was every reason for believing that those prospects would be fully realised. When alluding to the rich courses of ore in the north lode he ought, perhaps, to have remarked that practical miners prefer parallel lodes to continuations of the same lodes running north, south, east, and west, because parallel lodes generally made rich opposite to each other, the cause being that if the lodes were of similar character they had them running through the same stratification. In this case it was one of the foundations of the company's prospects that these parallel lodes would make rich courses of ore opposite where the north lode made the mine so rich and profitable. He thought they were fortunate in having so able and experienced a manager as Captain Charles Thomas, who had been for nearly 30 years one of the principal agents at the Cook's Kitchen Mine, which was a well-known mine, and which required great experience and great ability in working, and it required a man of great experience to conduct operations there; therefore, the directors were fortunate in securing the superintendence of Capt. Thomas, who visited the mine frequently and took a great interest in it, and who had a highly favourable opinion with respect to the mine turning out favourably. They also had a good resident agent. Captain Thomas stated he had every reason for supposing that Bennett's lode upon being developed would open up a large and very profitable mineral property. Capt. Charles Thomas was a man who stood very high in Cornwall as a practical miner, and, therefore, he thought the shareholders would be satisfied that their interests had been studied in that respect. There had been some little delay with respect to obtaining the water-wheel, but it was a fault which was, perhaps, a good one, because the directors had tried to get the wheel as cheaply as they could. This caused some unfortunate delay, but this was all the disadvantage arising from it. They had got a reduction of cost through the delay, but even this delay was not a matter of very much importance, because the contractor had to deliver it within eight weeks, and he hoped it would be done in less. When they got the mine to work then would be the time to begin to show the value of the property. The sales that had been made spoke favourably regarding the value of the property, inasmuch as hitherto the returns had been obtained from what the old people threw away. There was an enormous quantity of this good stuff accumulated. He need not refer at length to the advantages which this company possessed over the old workers in the way of labour and other things. There was the saving in carriage alone, which was an important item. There was now a railway within half a mile of the mine, whereas formerly, before the canal from Tavistock to Plymouth was made, the ore had to be taken all the way to Plymouth by horses; the dues were also about half what were formally paid. He might also mention that this was the first mine—certainly the first mine of any importance—which old Mr. John Taylor (the father of the late Mr. John Taylor, whose death they were sorry to hear occurred recently) had anything to do with, and which was the foundation of the well-known and influential house of John Taylor and Sons; it was the success of this mine which began the career of that great and famous house, and he might mention that the late Mr. John Taylor when he saw him spoke favourably of the prospects of this mine if properly carried out. (Applause.)

A SHAREHOLDER asked why the mine ever stopped at all?——The CHAIRMAN said there were two or three causes, the chief of which was the low price of copper, combined with heavy expenses at that time. Besides that the old workers threw away the arsenical mundic and tin, the former being then of no value. He might mention that Captain Daw believed that as they proceeded they would find large quantities of stuff broken underground, because the old workers only brought to surface the rich stuff which they could then make pay, and the remainder they put aside underground wherever they could find room for it.

Mr. POWELL: Then the old company did not sell any arsenic?——The CHAIRMAN: No; and a curious thing is that they threw away most of their tin. Captain Daw has seen splendid tin thrown aside.

A SHAREHOLDER said that arsenic was much more valuable now than then.

Mr. POWELL: Is it a fact that the parties who purchased it from the Taylor's worked at a profit?——The CHAIRMAN: Yes; that is so.

A SHAREHOLDER: The fact is that the old workers only realised a profit upon copper, and we hope to realise a profit upon copper, tin, and arsenic?——The CHAIRMAN: Yes.

A SHAREHOLDER: You have no idea of the quantity of arsenic?——The CHAIRMAN: It is impossible to tell. There are enormous quantities of it at surface.

A SHAREHOLDER: Is arsenic in increasing demand?——The CHAIRMAN: There has been a good demand, and some people say the demand will continue.

A SHAREHOLDER: How many shares have been taken up?——The CHAIRMAN: Nearly 20,000 for capital; we expect it will be made up to 20,000.

Rev. Mr. ANDREW: And beyond that you do not contemplate issuing any more.

The CHAIRMAN: No; not beyond the 20,000. Originally it was intended to work with steam-power, but it would have been a strange thing if the splendid water-power were neglected. We have the River Tavy to take water from, and the engineers in consultation with the manager have made the wheel a 10-ft. breast. For many years the mine was worked with steam. I may mention, with regard to the dues, that the old workers paid 1-8th, then 1-10th, and now it is about 1-30th. If the old workers had paid the same dues that we do it would have made a difference of 47,000*l.* to them.

A SHAREHOLDER asked whether there was any chance of the dues being increased?——The CHAIRMAN said not during the continuance of the present lease, which had about 18 years to run.

On the motion of the CHAIRMAN, seconded by Mr. SAMUEL YORK, a resolution was then passed altering the Articles of Association by making the qualification for present and future directors 200 shares.

The CHAIRMAN said that alteration was rendered necessary owing to the qualification having been omitted in the original Articles. He mentioned that Mr. Lamb, one of the directors, had visited the mine, and perhaps the shareholders would like to hear a few words from him.

Mr. LAMB said that after the exhaustive speech of the Chairman he had really but very little to say. He had been to the mine; he was there two months ago, and went underground. At that time there was nothing to be seen of this copper in the adit, but now it was met with, which was an important point. At that time there was not so much arsenic and mundic to be seen. It was then worth about 3 tons per fathom, and now it was worth 5 tons, and was improving. When they got the water out and came to the next level the copper would come in as a valuable article.

The CHAIRMAN, in reply to a question, said the 30 was the first level, but there were other levels as they unwatered the mine. The deepest level of the old mine was the 240 fm.

Mr. POWELL: The old workers would not have worked the mine to that depth unless there had been something worth following.

Mr. LAMB: There is every indication that the new workings should be as good as the old.

A SHAREHOLDER said he supposed the use of water-power would effect a very considerable saving as compared with steam?——The CHAIRMAN: The water-power is very much less expensive than the coal; it makes a great difference. It also effects saving in labour.

Mr. SAMUEL YORK: It will effect a saving of 500*l.* in coal alone, and there will also be a considerable saving in capital expenditure.

The CHAIRMAN said the directors would be very much surprised and disappointed if the mine did not speak for itself, in the shape of something more than returns, in less than 12 months. (Cheers.)

A SHAREHOLDER moved a cordial vote of thanks to the Chairman for the satisfactory statement he had made, and said he was sure all the shareholders were pleased to see Mr. Murchison looking in better health than some time ago. (Cheers.)——Mr. POWELL seconded the resolution, and also expressed his pleasure at seeing Mr. Murchison in better health.

The resolution was put and carried, and the meeting broke up.

WEST SETON MINING COMPANY.

The four-monthly meeting of shareholders was held at the mine on Thursday,—Mr. THOS. PRYOR in the chair.

The notice convening the meeting was read and the accounts submitted, showing a loss on the four months' working of 704*l.*, and a balance against the mine of 2208*l.* The sales of copper ore realised 1555*l.*, and of tin (71 tons) 645*l.* 14s. A call of 10s. per share was made.

The PURSER stated that the accounts embraced all labour costs paid up to April 16, and the merchants' bills were also charged up close. The credits were in excess of what they were at the last meeting, and he anticipated that at their next meeting they would be even still more favourable. Mr. Pryor added that the call made at the last meeting had all been paid with the exception of 3*l.*, which he was now expecting to receive. He did not think any mine in Cornwall had a better list of shareholders.

Captain RUTTER, in reply to a question, said the 190 end was 46 or 47 fathoms from shaft, and they had had a good lode for copper there for several fathoms driving. He had never seen the mine looking so well in the bottom as it was at this moment. They had lately holed the winze in the 190, and it had opened up a splendid piece of ground, and he had not the slightest doubt they would increase their returns very considerably in the next four months. The change in the shaft had come rather unexpectedly, and it certainly was a long distance down to find copper. Some people might think that it was too deep for copper, but if they could only meet with an important discovery there it would upset that theory for ever. At the present time they had a very good-looking lode there both for copper and tin.

Mr. F. W. MICHELL asked Capt. Rutter whether he had noticed, since the reduction in the price of dynamite, that it was of a different quality to what it used to be? He had heard it stated very forcibly by mine agents in the county that, considering its present strength, dynamite was not so cheap as it was before the price was reduced—that the strength of it was, in fact, reduced more than the price.

Capt. RUTTER replied that he purchased a stock of dynamite before the price was reduced. This was still being used, and he was, therefore, unable to express any opinion as to the quality of the dynamite that was being used since the reduction in price.

The CHAIRMAN stated that at their last meeting a resolution was passed appointing the executive of the mine, together with Mr. Rule, as a committee to wait on Mr. Bolden in order to ascertain what assistance, if any, Mr. Basset would be prepared to render them towards driving the cross-cut in the northern portion of the mine to cut the lode in that direction. They accordingly waited on Mr. Bolden and laid the matter before him, and he subsequently received a letter from that gentlemen stating that their application had been submitted to Mr. Basset, who desired him to say that provided the proposed cross-cut was at once driven by boring machinery north 100 fms. Mr. Basset would be happy to contribute out of dues one-fourth of the cost of driving, his expenditure not to exceed 300*l.* Mr. Bolden added that the offer was made on the understanding that the western ground was properly developed at the same time.

Mr. RULE thought the offer was a very liberal one, and one which the adventurers should accept. At the same time if they introduced boring machinery into the mine they should be at liberty to drive a cross-cut at their western ends as well, because by the aid of this machinery they would be able to open up the mine much more rapidly than by hand labour, and this, of course, would be to the advantage of the lode as well as to the adventurers.

Capt. RUTTER mentioned that the mine was now getting rather deep, and he thought the time had arrived when they should consider the advisability of adopting means by which the men could go up and down the mine instead of by ladder climbing. They had a shaft, part of which could be partitioned off, and they could fix a man-engine there. The whole thing could be done for very little money, and he need scarcely point out that it would be a great relief to the miners. They had a winding-engine that had very little to do at present, and which would be available for the purpose, and it was a mere question of rods and a few steps.

Mr. RULE should be very glad indeed to see a man-engine in the mine, but it should be remembered that the adventurers had been losing money for a long time past, and they could hardly be called upon at this moment to make so large an outlay of money as the man-engine would involve. It was true Mr. Basset had been most liberal towards them up to this time, but he thought they might not unreasonably ask him to render them some assistance in a matter of this kind.

The CHAIRMAN expressed a similar opinion. Mr. Basset had certainly at all times been most generous towards the West Seton adventurers. But this was a subject of considerable importance. It was not a matter from which the adventurers would derive any benefit that was not equally shared by the lord. But it would be done entirely in the interests of the working miner, and looking at it in that light he was quite sure Mr. Basset would show them the same consideration that he had hitherto done.

Capt. RUTTER, in reply to a remark from an ADVENTURER, said he did not think Cornish shafts in their present state were fit for riding up in cages. It was pleasant riding perhaps, but at the same time the men were conscious of the fact that they were suspended in mid-air almost by a mere string.——The matter was left in the hands of the executive, and the meeting separated.

EAST POOL.—At the meeting on Monday (Mr. George Michell in the chair) the accounts for the three months showed a profit of 700*l.* 19s. 6d., and a credit balance of 8542*l.* 17s. 1d. A dividend of 6400*l.* (1*l.* per share) was declared, and 2142*l.* 17s. 1d. carried to credit of next account. Capts. Maynard and Bishop reported upon the various points of operation. They have five tribute pitches working, at tributes varying from 3s. 6d. to 9s. in 1*l.* All the stopes and ends mentioned in this report are valued at per cubic fathom. The aggregate value per fathom of the various points of operation mentioned in the report is over 1000*l.* With regard to the Dynamite Committee, the Chairman said that he understood that a report was to be drawn up by Capts. Teague, Williams, and Thomas, giving the mines a statement of the transactions that had taken place, and the financial position. Until this had been shown to them he thought they should delay discussing the matter. He did not mean to say but what Mr. Waddington might be entitled to some testimonial, but he should like to see the result of the report before he came to a decision. Capt. A. T. James stated that Mr. Waddington was most anxious that the financial statement of all costs incurred in the county of Cornwall in this matter should be submitted to the committee in London.

Mr. Waddington had written several letters to Capt. Williams and Capt. Teague requesting the statement to be sent to London respecting this matter. Up to the present moment no such statement had been received, but as soon as that statement was received the money which was now in the committee's hands in London would be at once disbursed in proportion to the amount subscribed by the various mines. He did not wish to put himself in a wrong position there that day, but he should like to see Mr. Waddington rewarded for the interest he took in opposing the renewal of the dynamite patent, as he had been very zealous in the matter, but whether Mr. Waddington was entitled to other consideration than Capts. Teague and Williams, and others who assisted him he was not prepared to say. The Chairman could not see why they should reward one of the committee and leave the others out in the cold. Capts. Teague, Thomas, and Williams had been very energetic in the matter, and he did not for his own part, see why they should make a preference. Mr. Martyn remarked that, so far as he was individually concerned, he could only repeat that he believed it was entirely through Mr. Waddington that the attention of the public in Cornwall was called to the expiry of the patent, and had he (Mr. Waddington) not communicated with them on the matter, his impression was that the patent would have been renewed.

DEVON GREAT CONSOLS COMPANY.

At the ordinary general half-yearly meeting of shareholders, to be held on Wednesday, the following report of the board of directors will be presented to the meeting:—

The directors have to report that the receipts for sales of copper ores for the six months from Oct. 21, 1880, to March 24, 1881, inclusive, amounting to 5271 tons 8 cwts. 3 qrs.. realised 10,541*l.* 1s. 1d., or an average price of 2*l.* per ton against the previous six months' sales of 4854 tons, realising 12,846*l.*, or an average price of 2*l.* 12s. 3d. per ton. This shows that whilst there has been 417 tons of increased quantity of ore sold in the last six months, there has been a diminution in the amount of money received of 2305*l.* The difference in price between 2*l.* 12s. 3d. per ton obtained in the previous half-year ending Oct. 31, and in the accounts now submitted of 2*l.* per ton, makes a total difference of 12s. 3d. per ton, or 3228*l.* on the six months' sales of 5271 tons, or equal to over a 6s. per share dividend on the shares of the company. The average price of the Devon Great Consols copper ores was in—1847, 6*l.* 15s. per ton; 1857, 6*l.*; 1867, 5*l.*; 1877, 3*l.* 10s.; 1878, 2*l.*; first six months of 1880, 2*l.* 15s. 4d.; second six months of 1880, 2*l.* 5s. 4d.; and in the last six months, 2*l.*

The shareholders were informed in February last that the contract entered into early last year for the delivery and payment of 30,000*l.* worth of arsenic had been carried out, and that negociations had been pending as to another contract for this year's make of arsenic, but the directors had not succeeded in making such contract. Since, however, this information was sent to the shareholders the directors have made two sales and received altogether, during the last half-year, 14,041*l.* 17s. 10d., which is 1348*l.* 12s. 7d. less than the receipts for the previous half-year.

With regard to the expenditure of last half-year, it was stated at the general meeting in November that a renewal of the rails and repairs to some portions of the company's railway would be found necessary, and materials for that purpose had been ordered; and some further expenditure would also be required at the arsenic works, &c., and in the report of the local management (herewith annexed), dated Feb. 17, and as then issued to the shareholders, Mr. Moses Bawden and Capt. Isaac Richards clearly show the cause and absolute necessity of such expenditure.

It will, by Capt. Richards report, dated May 7, and also herewith annexed, be seen that the extra expenditure on the reduction works, flues, condensers, and calciners, and furnaces repaired, which with the damage caused to the buildings and works generally throughout the mines by the floods, storms, and frosts of the past unusually severe winter, necessitated the heavy outlay of about 2500*l.*, which, together with the difference in the price per ton of ore received, amounting to 3228*l.* on copper ore, and 1348*l.* less on arsenic, will make altogether about 7000*l.* difference to the company.

Notwitstanding, however, this serious difference, a dividend of 6s. per share, 3072*l.*, or at the rate of 25 per cent. per annum, has been paid to the shareholders, and the accounts made up to April 30, as now presented, show the satisfactory credit balance of 8443*l.* 9s. 5d., as against the previous half-year's balance of 7014*l.* 6s. 4d.

The shareholders will have observed from time to time that several of the levels driving both east and west on the course of the lodes have not been so productive as formerly, but it will be seen by the manager's half-yearly report, he concludes by stating that "looking at the various points of operation throughout the mines he considers the prospects on the whole are most encouraging."

In addition to the usual half-yearly statement of accounts some further particulars are annexed which will prove of interest to the shareholders, and will show the magnitude of this undertaking, and the large amount of copper ore and arsenic sold, and of the 154 dividends paid to the shareholders, amounting to 1,211,904*l.*, on a paid-up capital of 10,240*l.*

At the last half-yearly meeting, and, indeed, for a considerable time previous to that, allusions have been made to the low price obtained for the company's copper ore at the Cornish Ticketings, and suggestions have been made as to the desirability of obtaining greater competition by selling the ores at Swansea or elsewhere; and from information the directors have received there is, they have reason to believe, some powerful organisation in progress for the establishment of a smelting company to take over some very large works; and by which this and other Cornish and Devon mines will, it is anticipated, be materially benefited.

The directors and auditors retire at the forthcoming general meeting, as provided by the Articles of Association. The directors, who being eligible and have offered themselves for re-election, are:—The Right Hon. Lord Claud Hamilton, Hugh Stanley Morris, and Peter Watson.

Mr. H. R. Trehern does not offer himself for re-election owing to his advanced age and failing health. The auditors, Mr. George Thomas Rait, and Mr. Henry Cattley Stewart, also offer themselves for re election.

DEVON GREAT UNITED COMPANY.

At the second ordinary general meeting of shareholders to be held on Wednesday, the following report of the board of directors will be presented to the meeting:—

The directors have pleasure in meeting their fellow shareholders, and submitting to them the statement of accounts made up to April 30, from which it will be seen that there is a cash balance in hand of 1696*l.* 15s. 8d. The report of the local management, herewith annexed, clearly sets forth the large amount of work which has been accomplished since the commencement of operations, and by the powerful aid of Watson's 58-in. cylinder pumping-engine, the mines have been drained to the bottom levels—Watson's engine-shaft to the 60, and Willesford's shaft to the 104. Notwithstanding the severity of the weather for nearly the whole of the winter this important work has been accomplished in a most satisfactory manner, and attention will now be directed to opening out the various levels, and obtaining returns of copper and arsenical mundic ores therefrom.

Rock-boring drills are under the consideration of the board for the purpose of expediting the underground operations.

The directors who retire at the forthcoming general meeting as provided by the Articles of Association are:—The Right Hon. Lord Claud Hamilton, and Hugh Stanley Morris, who being eligible have offered themselves for re-election. Mr. H. R. Trehern retires from the direction owing to his advanced age and failing health. The auditors, Mr. H. C. Stewart, and Mr. John Langton, also offer themselves for re-election.

[For remainder of Meetings, see to-day's Journal.]

PROVINCIAL STOCK AND SHARE MARKETS.

CORNISH MINE SHARE MARKET.—Mr. S. J. DAVEY, mine sharedealer, Redruth (May 19), writes:—There has not been much business done in our market since last week, but prices have been fairly well maintained. At East Pool meeting, on Monday, a 20s. dividend (6400*l.*) was declared out of a profit of 7004*l.* The tin standards were officially reduced 3s. per cwt. on Monday. To-day there is a better demand for South Frances, and the following are closing prices:—Blue Hills, 3 to 3¼; Carn Brea, 22¼ to 23; Cook's Kitchen, 12¼ to 12½; Dolcoath, 56½ to 57; East Lovell, 2 to 2½; East Pool, 37 to 37¼; Killifreth, ⅛ to ¼; Mellanear, 4¾ to 5; New Cook's Kitchen, 6 to 6⅛; New Kitty, 1¼ to 1⅝; North Busy, ¾ to ⅞; Pendarves United, 2 to 2⅛; Penhalls, 1½ to 1⅝; Pedn-an-drea, 3¼ to 3⅜; South Condurrow, 9 to 9¼; South Crofty, 8½ to 9; South Frances, 11½ to 11¾; Tincroft, 17½ to 17¼; West Basset, 14 to 14½; West Frances, 11¼ to 12; West Kitty, 4 to 4¼; West Peevor, 15¾ to 16¼; West Poldice, 3⅞ to 4⅛; West Seton, 20 to 22; Wheal Agar, 12½ to 12⅝; Wheal Basset, 5⅜ to 5⅝; Wheal Boys, 2¼ to 2⅜; Wheal Comford, 3½ to 4; Wheal Grenville, 8 to 8½; Wheal Jane, ½ to ⅝; Wheal Peevor, 16 to 17; Wheal Kitty (St. Agnes), 1⅞ to 2⅛; Wheal Prussia, 2 to 2⅛; Wheal Uny, 2⅛ to 2⅜; Phœnix, 4¼ to 4¾.

— Mr. J. H. REYNOLDS, stock and share broker, Redruth (May 19), writes:—During the week a fair business has been doing in all the leading shares, including Carn Brea, Dolcoath, East Pool, West Frances, Wheal Agar, &c. South Frances have advanced to-day, and close at their best. Pedn-an-dreas also in demand at an advance. Phœnix United likewise in request at higher rates. Subjoined are closing prices:—Blue Hills, 3 to 3¼; Carn Brea, 22½ to 23; Cook's Kitchen, 12¼ to 12½; Dolcoath, 56¼ to 56¾; East Pool, 37 to 37¼; Gunnislake (Clitters), 4 to 4½; Levant, 6 to 8; Marke Valley, 2 to 2½; Mellanear, 4½ to 5; New Cook's Kitchen, 6 to 6½; North Busy, 10s. to 15s.; North Herodsfoot, 10s. to 15s.; North Pensthruthal, 1 to 1¼; Pedn-an-drea, 3¼ to 3⅜; Pendarves United, 4 to 6; Phœnix, 4⅝ to 4⅞; Penhalls, 1¼ to 2; South Caradon, 50 to 55; South Condurrow, 9 to 9¼; South Crofty, 8¼ to 8¾; South Frances, 11¼ to 12; Tincroft, 17½ to 18; Trugo, 1¼ to 1½; West Basset, 14¼ to 14½; West Frances, 11¼ to 12; West Peevor, 15¾ to 16; West Poldice, 4 to 4¼; West Seton, 20 to 22; West Kitty, 4 to 4¼; Wheal Agar, 12 to 12½; Wheal Basset, 5¼ to 6; Wheal Boys, 2¼ to 2½; Wheal Comford, 3½ to 4; Wheal Grenville, 7¾ to 8¼; Wheal Jane, 10s. to 15s.; Wheal Jewell, 10s. to 15s.; Wheal Kitty, 2½ to 3; Wheal Peevor, 17½ to 18; Wheal Prussia, 1¾ to 2; Wheal Uny, 2½ to 3. Cornish Bank, 24½.

— Mr. M. W. BAWDEN, Liskeard (May 19), writes:—The mining market continues dull and inactive, business mostly confined to a few of the leading mines, although prices have not given way in a proportionate amount to the reduction on the price of tin. Phœnix United advanced to 4½ buyers. Subjoined are the closing quotations:—Bedford United, 2 to 2½; Carn Brea, 22 to 22½; Cook's Kitchen, 12 to 12½; Dolcoath, 56½ to 57; Devon Consols, 10 to 10¼; Devon Great United, 1½ to 1¾; Drake Walls, 1 to 1¼; East Caradon, 1 to 1½; East Crebor, ⅝ to ¾; East Herodsfoot, 5s. prem.; East Pool, 37 to 37½; Gawton United, 1 to 1⅛; Glasgow Caradon, 1 to 1⅛; Gunnislake (Clitters), 3¾ to 4; Herodsfoot, ⅝ to ¾; Hingston Down, 1⅛ to 1¼; Marke Valley, 1¼ to 1⅝; New West Caradon, ½ to ⅝; North Herodsfoot, ½ to ⅝; Old Gunnislake, ⅛ to ¼; Phœnix United, 4¼ to 4½; Prince of Wales, ⅞ to 1; South Caradon, 52½ to 55; South Crebor, ⅝ to ¾; South Crofty, 8¼ to 9; South Devon United, 2½ to 2¾; South Frances, 11¾ to 11½; Tincroft, 17 to 17½; West Basset, 14 to 14¼; West Caradon, ⅝ to ¾; West Frances, 11 to 11½; West Mary Ann, 1⅝ to 1¾; West Crebor, ¾ to ⅞; West Phœnix, 1¾ to 1⅞; Wheal Agar, 12 to 12¼; Wheal Basset, 5¾ to 6⅛; Wheal Crebor, 3½ to 3¾; Wheal Grenville, 8⅛ to 8⅜; Wheal Hony and Trelawny, 2¼ to 2½; Wheal Kitty, 2 to 2¼; Wheal Jane, ½ to ⅝; Wheal Peevor, 17 to 17½; Wheal Uny, 3 to 3¼.

— Mr. JOHN CARTER, mine sharedealer, Camborne (May 19), writes:—Prices remain without much alteration in the Cornish Share Market: rather a quiet tone prevails, and business is somewhat restricted. At East Pool meeting, on Monday last, a dividend of 20s. per share was declared, and the credit balance increased to 2142*l.* The tin standards were officially reduced 3s. on the 16th instant, and are now 83s. and 84s.; but, as this change was fully anticipated, it had but little effect on our market. Smelters had not been buying full standards previously. Closing prices annexed:—Blue Hills, 3 to 3¼; Carn Brea, 22¾ to 23; Cook's Kitchen, 12¼ to 12½; Dolcoath, 56¼ to 56¾; East Botallack, 1½ to 2; East Caradon, 1 to 1¼; East Lovell, 2 to 2½; East Pool, 37 to 37¼; Mellanear, 4¾ to 5; New Cook's Kitchen, 6 to 6⅛; North Busy, 12s. 6d. to 17s. 6d.; Penhalls, 1¾ to 2; Phœnix, 4½ to 4¾; Pedn-an-drea, 3¾ to 3⅞; Santa Gertrude, 170 to 175; South Condurrow, 8¾ to 9; South Crofty, 8¾ to 8¾; South Frances, 11½ to 11¾; Tincroft, 17½ to 17¾; West Basset, 14 to 14½; West Frances, 11¾ to 12¼; West Peevor, 15¾ to 15¾; West Poldice, 4 to 4¼; West Seton, 20 to 21; Wheal Agar, 12⅛ to 12⅜; Wheal Basset, 5¾ to 6; Wheal Grenville, 8 to 8¼; Wheal Jane, 7s. 6d. to 10s.; Wheal Peevor, 16 to 17; Wheal Kitty, 1⅞ to 2⅛; Wheal Uny, 2¼ to 2½; West Kitty, 4 to 4¼.

MANCHESTER.—Messrs. JOSEPH R. and W. P. BAINES, sharebrokers Queen's Chambers, Market-street (May 19), write:—Though the markets have continued generally inactive during the past week very little disposition to act at all largely being noticeable, figures as a rule have remained fairly steady, and in some classes fresh advance is noticed. The value of absolute security investments having reached a point which shows such small return for capital has brought about an enquiry for such securities as Bank and Insurance shares, and this has doubtless to a large extent caused the continued upward movement in these and kindred securities, which has been going on for some time past. The cheapness of money and the seasonable weather would most probably have still further advanced figures, for the leading speculative stocks, had they had uninterrupted sway of the markets, but fresh clouds having appeared on the political horizon have in no small degree counteracted the effects the former influences would have had, and a feeling of uncertainty restricts business.

BANKS.—The tranractions reported for the week are few, but prices marked are all round about the best lately obtained, and in one or two instances advances have been established. Manchester and Liverpool District have the chief share of dealings, the latest figures being the best. In Union Bank of Manchester also a further enhanced price has been realised. The changes in quotations all show upward movement. They are as follows:—National Provincial (new), ½; Manchester Joint-Stock, ⅜; Union Bank of Manchester, ¼; Bank of Liverpool, ¼; Manchester and County, and Manchester and Salford, ⅛ each. Parr's Bank have shown a rise of ½ during the week, but have since settled back to figures current a week ago.

INSURANCE shares, though not active, still command full figures; on the whole the dealings marked being at rates fully up to or in advance of those realised lately. Quotations, however, are rather contradictory, but it is only in two instances—British and Foreign Marine, and Liverpool, London, and Globe—that the changes are very mark. Higher: British and Foreign Marine, ¼; Ocean Marine, ¼; Lancashire and Yorkshire Accident, ⅛; Lancashire, 1/16; and British Re-Insurance, 6s.—Lower: Liverpool, and London, and Globe, ⅜; and Equitable Fire, London and Staffordshire, and Queen, 1/16 each.

COAL, IRON, &c., AND MINING.—Very trifling business done, flatness still pervading this market. There are one or two cases of advance worthy of note—Park Gate Iron and John Browns—otherwise the quotations show very few changes either way. The Indian gold mines quoted here have latterly shown a little better, South Indian, after marking slight reduction in value, being now again up to last week's prices. Tredegar Coal and Iron, B, which have long been dormant, have produced two transactions lately, and buyers' figure is advanced, though sellers' price remains undisturbed. A similar change has occurred in the quotation for Chatterley Iron, but in this case without business recorded. In full the alterations are—Higher: Park Gate Iron, 1¼; John Brown, ¾; Tharsis Sulphur, &c., ⅜; Palmer's Shipbuilding, B, ¼; Indian Glenrock and Indian Trevelyan, ⅛ each.—Lower: Bolckow, fully paid, ⅜; Ebbw Vale, ⅛; Chillington Iron, ⅛; and Canadian Copper, &c., 6d.

COTTON SPINNING AND MANUFACTURING.—Only the most popular concerns are in any demand, and for these full rates are insisted on. In others transactions are very limited, and market languid.—TELEGRAPHS: Only a small number of transactions recorded, and figures where changed all adverse, Anglo-Ordinary and Deferred being ¾ each; ditto, Preferred, ½; and Western and Brazilian 1/16 lower. The last named have been nearly ⅛ lower during the week, but have since rallied.—CORPORATION STOCKS, &c., still strong, with little offering, and figures have advanced, Leeds being 1, Bradford ½, Oldham ½, and Manchester Consolidated ¼ higher.—MISCELLANEOUS: A rapid jump of 14 in Manchester Royal Exchange Building stock is the chief item, besides some few others have advanced—West India and Pacific Steam, ½; Manchester Carriage, A, ⅜; Rylands and Sons, ¼; and Southport Winter Gardens, ⅛.—Lower: Freeholders, ½; and South Port Botanical, ½. Figures in others mostly steady.—RAILWAYS: Business has not been active, yet values are in most cases somewhat enhanced. The strength in Great Easterns was lost through a larger decrease in their traffic than had been expected. Heavy lines have been favourably influenced on good takings being reported this week. Scotch lines are also better. The chief instances of advance are in Metropolitan Districts, North Staffords, and North-Easterns. Grand Trunk of Canada were well bought last Saturday, and recorded the highest figure for some time, and to-day's traffic helped them to 25, but they lost strength in the absence of business. Great Western of Canada are lower, but there is still a hopeful view taken of their future. In Americans prices are irregular. Eries have dropped 21, while Philadelphia and Readings exhibit 81 improvement. Pennsylvanias are stronger, the new shares being allotted at the rate of 1 for every 8 old shares held. Ohio descriptions are steady.

HULL.—Mr. W. FOWLER SUTTON, stock and share broker, St. Mary's Chambers (May 19), writes:—The railway markets have been steady this week, and most stocks are quoted higher, but not, however, to any important extent, an advance of 2 per cent. in Berwicks being the chief improvement. Brighton, A, have been preternaturally quiet, but cannot be expected to remain so much longer. The heavy lines have been most in favour, inasmuch as the showery weather is beneficial to the country, while retarding pleasure traffic. There is little change in Canadian rails, but a large business has been done in foreign, notably Mexican and South American. With money so cheap, and Brazilian Government stocks paying only 5 to 5¼ as an investment, there is every reason why many of the Brazilian railway shares, which bear the Government guarantee of 7 per cent., and stand at a price paying an investor 6 per cent. and over, should still further improve, the security in one case being merely a promise to pay, and in the other the promise to pay back with the materiel security of the railway. Russian Government stocks and the railways guaranteed by that country assimilate closely in the interest they return to an investor, and I fail to see why Brazilian should not also. Foreign loans are but little changed generally, the chief exception being the Argentine Hard Dollar loan, which at 86 marks an advance on the week of 6 per cent. American rails still irregular, but the tone is fairly good. Local stocks quite unchanged, quotations are—Hull Banks, 12½; London and Yorkshire, 32s. 9d.; Yorkshire, 25½; Hull Docks, 86; Hull Trams, 9; Earle's Shipbuilding, 20½; Sutton Gas, 12¾; Hull Gas, 56. The following *errata* occurred in last week's report—Trunk traffic 9000*l.* increase, not 900*l.* Advance in Second Preference Trunk 1¼ per cent., not 9¼.

SCOTCH MINING AND INDUSTRIAL COMPANIES SHARE MARKETS.

STIRLING.—Mr. J. GRANT MACLEAN, sharebroker and ironbroker (May 19), writes:—During the past week the prices have been dull, in sympathy with prices for metals. Trade reports are still quiet, but the indications point to improvement—the seasonable weather, which is favourable for agricultural operations. The quietness, indeed, is mostly in the export trade, and some of the home industries are getting more active. The money market remains easy.

In shares of coal, iron, and steel companies the movements for the week comprise advances of 5s. per share on Scottish Australian, 2s. 6d. each on Chillington Iron, Scottish Australian (New), and Steel Company of Scotland, 1s. 3d. on Ebbw Vale, and smaller extents on Benhars and Marbella; on the other hand, Bolckow Vaughan are reduced 10s. per share, Monkland (Preference) 3s. 6d., Omoa 2s., Clyde Coal 1s. 6d., and Monkland (Ordinary) 1s. In the Scotch pig-iron market the price of warrants has declined from 46s. to 45s. 5d. on sales to close, induced by the large production and small demand. The manufactured departments, however, are brisker, colonial reports good, and a renewal of the American demand is still only wanted to improve prices. The Armiston Colliery has paid an interim dividend of 8 per cent., and the Parkgate Iron Company's dividend for last year is to be 7½ per cent. Steel Company of Scotland shares are higher, notwithstanding a partial strike at their works at Newton. Benhars steady at 9s. 6d. to 10s.; Altami are at 52s. 6d.; Bolckow, Vaughan, 26¾; Bilson and Crump, 52s 6d.; Cardiff and Swansea, 35s. to 40s.; Chatterley Iron, 6½ to 7; Chillington Iron, 52s. 6d. to 57s. 6d; Chapel House Colliery, 12s. 6d.; Clyde Coal, 74s. to 76s.; Ebbw Vale, 8 to 8½; Great Western Colliery (B), 50s.; Henry Briggs (A), 10; John Bagnell and Sons, 7s. 6d.; Lofthouse Colliery, 40s. to 60s.; Marbella, 104s. to 106s.; Monkland, 12s. to 14s.; Ditto (Preference), 17s. 6d. to 20s. (been 29s); Newport Abercarn, 7½; New Sharleston Colliery (Preference), 80s. to 90s.; Omoa and Cleland, 25s. to 27s.; Onllwyn and Dulais Colliery, 52s. 6d.; Steel Company of Scotland, 10¼; and West Cumberland, 8 to 8½.

In shares of foreign copper concerns prices have improved in sympathy with the market for that metal. Rio Tinto bonds are 1*l.* 10s. higher; Tharsis 18s. 3d.; Rio Tinto shares, 10s.; and Tharsis (new), 7s. 6d.; but Huntingtons and Canadian Copper are both a little lower. Tharsis have advanced from 36⅛ to 37⅝; Canadian are at 36s. 6d. to 37s. 6d.; Huntingtons, 46s to 41s.; Panulcillo, 6 to 6¼; Rio Tinto, 20½ to 20¾; Santa Cruz Sulphur, 5s. dis. to par; Yorke Peninsula, 4s. 6d. to 5s. 6d.; and ditto (preference), 20s.

In shares of home mines there has been very little business doing. Glasgow Caradons slightly lower at 19s.; Blaen Cwlen are at 21s.; Caron, 11s. 3d.; Cambrian, 7s. 6d.; Cwm Pryf, 5s.; D'Eresby Mountain, 30 to 35; East Chiverton, 20s. to 25s.; East Lovel, 40s. to 60s.; East Long Rake, 30s.; Fortescue 18s. 9d.; Gawton, 20s.; Gover Consols, 26s.; Gunnislake (Clitters), 80s.; Great Wheal Polgooth, 15s. to 20s; Great Polgooth United, par; Indian Queens, 31s. 3d.; Killifreth, 3s. 6d.; Lady Ashburton, 21s.; Ladywell, 5s. 6d.; New West Caradon, 9s.; New Penrose, 22s.; North Hendre, 4 to 5; Old Shepherds, 5s. to 7s. 6d. prem.; Parka Consols, 31s. 3d.; Parry's Copper, 15s. to 17s.; Pateley Bridge, 5s. 6d.; Pioneer Mining, 5s. prem.; Silver Valley, 2s. prem.; South D'Eresby, 9s.; South Crebor, 11s. 6d. to 22s. 6d.; Tamar, 20s. to 30s.; Tin Hills, 30s. to 40s.; Van Consols and Glyn, 6s. to 8s.; West Caradon, 14s.; West Pateley, 15s.; West Phœnix, 40s.; and Wheal Fortune, 41s.

In shares of gold and silver mines Richmonds have improved 1*l.* per share to 17½, ¾. Callao "Bis" are at 25s.; Don Pedro, 12s. 6d. to 17s. 6d.; Devalah Central, 25s.; Flagstaff, 7s. 6d. to 10s.; Gold Hill, 6d. prem.; Gold Association of Canada, 17s.; Gold Coast, 8s. to 8s.; Great Southern Mysore, 13s. 6d.; Indian Mammoth, 5s. dis. to par; Indian Trevelyan, 27s. 6d. to 30s.; Indian Glenrock, 45s.; Indian Kingston and Landhurst, 6d. prem.; Indian Phoenix, 31s. 3d.; Javali, 5s. to 7s.; Kapanga, 8s. [9d. to 10s.; Mysore Reefs, 2s. 6d. prem.; New Gold Run, 5s.; Nava de Jadraque, 10s. to 15s.; Pestarena United, 6s. to 8s.; Quartz Hill, 1s. prem.; and Silver Peak, 20s.

In shares of oil companies Dalmeny have advanced 2*l.* per share and Broxburn, 2s. 6d. Young's Paraffin are reduced 8s. 9d., and Uphall, 6s. 3d. The dividend of the Uphall for last year has been announced at 3½ per cent., which compares with 6 per cent. in previous. The net profit was 5316*l.*; 4000 is provided for depreciation, and 1466 carried forward. Young's Paraffin improved to 11⅜ at the beginning of the week, but have since declined to 10½.

Business in shares of miscellaneous companies continues very restricted. Droitwich Salt are at 15s. to 25s., and Lawe's Chemical, 4¾ to 5¼.

INDIAN GOLD MINES COMPANY (Limited).—A meeting of this company was held in Glasgow on Tuesday. It appears they have 3000 acres of land, and the Chairman stated there was no question of the fact of ore giving a good return being found on the surface anywhere through it, but the whole question was one of its continuing in depth, and the indications so far were favourable to that also. The company's capital of 48,480*l.* has been nearly all expended, so a new issue of shares to the extent of 60,000*l.* is proposed to be made at par to existing shareholders. Several agreements with other companies settling matters in dispute were approved of at the meeting. The machinery and materials being now all on the property it is expected practical tests will soon be obtained, but delays have and may still be encountered.

EDINBURGH.—Messrs. THOMAS MILLER and SONS, stock and sharebrokers, Princes-street (May 18), write:—The changes in the railway ordinary stocks during the part week have been of little importance, and in no case amounted to 1 per cent. till to-day. The market, however, is now firmer. Preference and debenture stocks continue to command high prices. Grand Trunks made a sudden spring, and reached 25⅛, but have receded again to 24½, only ¼ above last Thursday's price. Coandas has declined from 16⅝ to 16¼. Americans have been better. The only change in the Bank stocks is a rise in British Linen from 264 to 270. Northern Assurance have risen from 57¼ to 59. In mines, Marbella Iron Ore have advanced from 105s. to 106s. Monkland Iron have receded from 16s. 6d. to 15s., and the guaranteed shares from 22s. 6d. to 19s. 6d. Rio Tintos have risen from 20⅛ to 20 1/16. In oil shares Young's Paraffin have fallen from 11⅜ to 10⅝.

IRISH MINING AND MISCELLANEOUS COMPANIES' SHARE MARKET.

CORK.—Messrs. J. H. CARROLL and SONS, stock and share brokers, South Mall (May 18), write:—Markets remain very dull, Great Southern are steady at 111¾, and Midlands at 84. Macrooms were done at 6¾, and Passages offered at 11¼. National Banks are firm at 68¾ to 69, and Munsters at 7 to 7⅛; Hibernians are better at 47¾, and Provincials at 61½. Cork Steam Packets are 12⅜ to 12½. Lyon shares remain 5 to 5 1/16, and Dalys 3 to 3¼. Gas shares are offered at 7⅝, and Gouldings at 9¾. Levys were done at 4¾, and Harbour 4½ per cent. debentures at 2¼ per cent.

WATSON BROTHERS' MINING CIRCULAR.

WATSON BROTHERS

MINEOWNERS, STOCK AND SHARE DEALERS, &c

1. ST MICHAEL'S ALLEY, CORNHILL, LONDON.

In forming a Cost-book company all original shareholders who sign it come in alike, and whatever has been given for the property must be stated and entered in the Cost-book and shared alike. For instance, if a mine is bought for 500*l.*, and a Cost-book company formed to work it, resolutions embodying this, and making a call to defray the purchase-money, and to provide for future operations, are passed and signed by all the original shareholders, and a Cost-book company seldom exceeds 12,000 shares. It will be seen, therefore, that under this system it would be impossible for promoters to buy a mine for 500*l.* and sell it to the public for 50,000*l.* or 60,000*l.* profit, as it is some time done under the Limited Liability Act. Perhaps this is one of the reasons now influencing so many who would altogether condemn the simplicity of the Cost-book. No doubt the shareholders in many mismanaged Cost-book mines have been made to suffer in the past through the action of the Stannaries Court, that "thumbscrew" of the merchants in all failing concerns, and in this respect few people have suffered more than we have ourselves. We have had to pay pretty smartly more than once, and the very name of the Stannaries Court is odious to us. But in these new limited liability companies promoters are worse than the Stannaries, for they screw and take all they can get at the beginning; they do not wait to the *end*, and the Stannaries have no power under the Cost-book unless debts are allowed to accumulate and a company fails. The "Stannaries" are official liquidators. And for many reasons we think it best in modern Cost-book mines to have a large capital subscribed to begin with—enough, at least, for a year or two, and until the prospects of the mines can be fairly ascertained. This is against the recognised system of the Cost-book in Cornwall, and may be almost said to be an innovation of our own. The rule of the old Cost-book was to make calls only for debts incurred; and to provide nothing for the future. Thus at a two-monthly meeting the debts would be ascertained and a call made to provide for them; but nothing called for the working of the succeeding two months; thus a system of working on credit was established which was and is the great blot of the Cost Book when allowed

It will be seen from the above that as all the *original* subscribers to a Cost-book company come in alike, so that any premium that may arise on the shares benefits all the original shareholders alike. Thus in West Crebor we issued the whole of the shares at 5s. each, the money so subscribed being capital to commence the mine with, and all who took shares reap the benefit of the rise of cent. per cent. if they wish to sell. The great mischief of the old Cost-Book, under which calls were constantly being made, was the fact that one did not always know his partners; and that good men might get out by quietly relinquishing, or transferring their shares to men of straw. Thus if a mine turned out badly, good men had to pay debts for the bad. It was in this way that we suffered more than once. And, therefore, to remedy it, we insist upon an office in London where the register of shareholders is kept; and upon having a responsible financial committee to go through the costs of expenditure every month, and see that at shareholders' meetings every liability of the company is laid before them, and provided for. Where these rules are carried out, and we do not recommend mines in which they are not strictly attended to, there is nothing simpler or safer than the Cost Book System.

The Margaret lode has been cut at the 100 level at Polrose, more than 2 ft. wide, tin throughout; and it may soon, we hope, be in a course of ore. At the 90 just above this point there was no tin in it whatever when first cut. It will be remembered that down to the 50 level the Polrose lode yielded 232 tons of tin, which sold for 11,584*l.* Then the Margaret lode crossed it and, being the strongest heaved it away north and disturbed the ground. It was then thought necessary to sink deep enough to cut the lodes below the disordered ground, and the idea was that the 90 would be deep enough. The 90, however, disappointed us, and it was at once resolved to sink to the 100, which was done, and it is quite clear the lode is improving in depth. We may soon have a good mine on the Margaret lode, and others may be cut shortly. Upwards of 30,000*l.* have been spent upon the mine, it is amply supplied with engines and machinery, including 60 heads of steam stamps; so that all we want is the tin.

A week or two ago we stated in a few fathoms further driving the 90 cross-cut south at Parys Copper would get out of the hard and into good ground, and a great change has already taken place. The agent now writes—"I have never seen the 90 south look so promising as at present." This end is now getting into the south or productive part of the great open cast, and the discovery so long deferred and so earnestly expected may be near at hand. The boring machinery is doing three times as much in a month as the men formerly. The sampling is 150 tons of copper ores.

Morfa Du is looking well and doing well.

The ends in Kirkmichael continue good, and are opening ore ground that will soon set to stope.

At West Crebor the shaft is now down 13½ fathoms and sinking at the rate of 1 fathom a week. The lode is 3½ feet wide and of a most promising character. When down to the 20 levels will be driven upon it.

In the bottom of the 80 east at East Blue Hills the lode is 2 feet wide, with good tinstuff.

Lectures on Practical Mining in Germany.

CLAUSTHAL MINING SCHOOL NOTES—No. CLXXV.*

BY J. CLARK JEFFERSON, A.R.S.M., WH. SC.,
Mining Engineer, Wakefield.
(Formerly Student at the Royal Bergakademie, Clausthal.)

ROTATORY VENTILATORS.

The relative advantages and disadvantages of furnace and mechanical ventilation may be summed up as follows:—

Furnaces are much less expensive in first cost, but afterwards, as far as mere attendance is concerned, may be said to be much dearer, since a furnace requires the special attendance night and day of a furnaceman. It might be objected to this that the ventilator requires the attendance also night and day of a fireman to the boilers, but in the case of large collieries, where the steam is required to be kept up night as well as day for the sake of pumping engines, &c., the expense of the extra attendance for a ventilator will be but slight. When in proper order the ventilator will require but occasional inspection. A careful comparison of the useful ventilating effect obtained by burning 1 lb. of coal in a ventilating furnace, and in the boiler furnace for a ventilator, will be found to give a result in favour of the ventilator for most collieries where the depth of the furnace does not exceed 600 yards; and this advantage will be all the greater in favour of the furnace the less the depth of the latter below the surface. This opinion seems first to have been given as the result of actual experiment by Ponson, but for a long time had little influence on the introduction of mechanical ventilation. A consideration of the theory of furnace ventilation shows that the depression which can be produced by burning a given quantity of coal in a ventilating furnace increases with the depth, and consequently there will be some depth at which the useful ventilating effect of 1 lb. of coal burnt in a ventilating furnace will equal the effect obtained by burning the coal in the furnace of a boiler serving a ventilator. Any increase of depth beyond this will be in favour of the underground furnace. The following considerations will make this still plainer. Suppose we have two pits, the one 1000 ft. the other 2000 ft. deep, and that the same quantity of air passes over each furnace (that is the amount of ventilation is the same in both cases). Suppose, moreover, that in both cases the temperature of the downcast shaft is 50° Fahr., and the temperature of the upcast shafts 120° Fahr. Since the same quantity of air passes over each furnace in the same time, and the increase of temperature is the same in both cases, the actual consumption of fuel is the same in both cases. With the shaft 2000 ft. deep the motive column is about 250 ft. in height, which corresponds to a water guage reading of 4 in. In the case of the shaft 1000 ft. deep the motive column is only 125 ft. in height, corresponding to a water-guage reading of 2 ins. A careful calculation and comparison of the effect of depth on the relative economy of the furnace and mechanical ventilation has been made by Harvey, who gives 585 meters as the limit beyond which furnace ventilation is more economical than that of the best constructed ventilators. This depth is so great that it may be said that for the great majority of mines furnace ventilation is not so economical as mechanical ventilation. There should, however, be no difficulty in making the calculation for each case, in doing which the interest on the large capital involved in the construction and putting up of a ventilator should be drawn into account as one of the items of expense in employing mechanical ventilation. Another point in the consideration of the relative economy of furnace and mechanical ventilation is that the former requires a much better class of coal than the latter, which, however, has not to be raised to the surface.

It was formerly urged as a disadvantage of the use of mechanical ventilators that, as the upcast shaft required to be closed, the shaft could not be well used for other purposes, more especially for winding operations. This objection is got over by encasing the mouth of the shaft above the level of the pit bank, the cage itself blocking the opening in the casing when the falling doors in the casing are raised. Of course such an arrangement means a considerable outlay in the first place, which adds to the cost entailed by a ventilator. On the other hand, if the upcast shaft with furnace ventilation is used for surface winding purposes the guides are liable to be damaged by the heat of the fire.

If the ground round the shaft is very wet it will be necessary to employ extra care and material in order to keep the shaft dry, on which in a great measure will depend the efficiency of the furnace. The wetness of the shaft is not of so much moment in the case of mechanical ventilators. The effect of a given area of grate surface for a given depth of shaft cannot be increased above a certain limit, and a great depression can only be obtained in shallow pits by the consumption of an excessive amount of fuel, whilst some of the rotatory ventilators will give a large depression without any excessive consumption of fuel above that required for ordinary depression.

The chief argument in favour of mechanical ventilation over furnace ventilation lies in the fact that in the case of mines of fire-damp the ventilator is safer than the furnace. In the case of the furnace there is the liability of setting fire to the coal adjacent to the furnace, and where the coal gives off so much gas that the returns become dangerously loaded with it, there is the liability of the gas being ignited at the furnace. When this is the case the fire is usually fed by a larger quantity of fresh air, which diminishes the quantity of air passing through the workings, so that although the danger of lighting the gas at the furnace is diminished there is an increased danger in the working places, owing to a larger proportion of the air travelling the workings being charged with gas so as to be explosive. In the case of an explosion taking place it is often dangerous to have a lighted fire underground, and the ventilating furnace must be put out when the returns coming from the now badly ventilated working places contain so much gas as to be explosive. The ventilating current is thus stopped when it is most necessary to have a current of fresh air to commence the work of rescue or exploration. Even in those cases where the furnace is arranged to be fed with fresh air, the explosion may have shattered the doors and stoppings, and have made this impossible. Moreover, if the explosion leaves the furnace arrangements intact the guides and shaft work may be so much damaged that the furnace cannot be got at for some hours. None of these disadvantages are shared by mechanical ventilation, where, as ought to be the case, the ventilator is placed sideways from the shaft, so as to be untouched by an explosion. In case of an explosion taking place the ventilator may continue to work without stopping, it being only necessary to cover up the mouth of the upcast shaft. The disturbance of the air current is only momentary, whilst when a furnace is used the ventilating current is often at once brought to a standstill, or even reversed. At such times mechanical ventilation allows of the ventilator being forced above the ordinary and economical speed at which the ventilator is usually driven; and, besides, most ventilators are constructed so as to give a reserve for exigencies. Many of the ventilators are constructed with a double engine, so that it is not necessary to keep the ventilator at rest whilst the engine is undergoing repairs. In such a case it is usual to work each engine separately and alternately a month at a time. When the ventilator has been brought to a standstill, even though it be for a short time, care should be taken in entering the mine, even when the ventilator has been started again, since an air current which may keep a portion of the mine clear of gas when constantly circulating often requires a long time to clear out gas already collected. The following method has often been proposed for completely clearing a mine of gas. The downcast shaft is closed air-tight, and the ventilator set in rapid rotation, till a maximum depression has been obtained, and the ventilator is kept for some time in rotation, so as to keep up this depression. The decrease of atmospheric pressure in the pits causes an increased efflux of gas from the coal into the roads and airways of the pit, and this is driven out on again opening the downcast shaft. This plan has the great disadvantage that the upper part of the goafs are filled with fire-damp, which cannot always be removed at once.

Whether the average ventilation in the cases where furnaces are employed is equal to that usually given may often be doubted, since the measurements are nearly always made just after the furnace has been cleared, and is in a more efficient condition than at any other time. Ponson in his "Traite de l'Exploitation" remarks that "to obtain a given amount of ventilation it is sufficient to make the ventilator of a certain size, or even to multiply the number of ventilators, but that one cannot increase the power of a furnace fixed in the mine without altering the construction of the furnace, or of the roadways leading to it, an undertaking involving more time and expense than an alteration of the ventilation at the surface." The above appears, however, a very doubtful argument in favour of mechanical ventilation. It is not so very expensive to increase the number of furnaces, and it is not necessary that they should all be in one of the same drift leading to the bottom of the shaft. Indeed, a favourable arrangement is to place the furnaces in two drifts, which enter the bottom of the shaft at right angles. Moreover, it is necessary to build the ventilator at once of the maximum size required by the future requirements of the mine, whilst in the case of furnace ventilation it will not be necessary to put up more than one furnace at a time, the number being increased as the mine is developed. The increase in the number of ventilators is an alternative which would not recommend itself to mining engineers as preferable to disposing of the smaller ventilator, and erecting a larger one. Another great advantage in mechanical ventilation lies in the fact that the amount of ventilation is independent of the temperature, which affects to a very great extent the efficiency of the furnace.

In conclusion, we may say that in the case of mines not giving off fire-damp, and where the air-ways are large, and the shafts comparatively deep, furnace ventilation may be very advisably used. In the case of mines giving off fire-damp mechanical ventilation is to be preferred, unless the depth of the shaft approaches 2000 ft. In the case of very shallow mines, whether giving off gas or no, the use of mechanical ventilators is to be preferred. For pits of 2000 ft. in depth and upwards furnace ventilation is to be preferred, and where the mine gives off fire-damp the furnace should be fed entirely with fresh air.

* Being Notes on a Course of Lectures on Mining, delivered by Herr Bergrath Dr. VON GRODDECK, Director of the Royal Bergakademie, Clausthal, The Harz North Germany.

A BIG MINE ENGINE.—Messrs. Harvey and Co. dispatched on Monday a 90-inch engine, weighing in all about 30 tons, for a mine near Liskeard. It is the second largest ever mannfactured by this firm. Work at the foundry is very brisk.

ROLLING MILLS.—To give increased facilities in rolling blooms, bars, steel ingots, and plates, Mr. T. NICHOLLS, of Barrow-in-Furness, proposes to construct rolling mills with four rolls, in two pairs, one pair being vertical, and the other pair horizontal. These rolls are placed in their housings, or frames, as near together as practicable without touching each other. The four rolls are all connected by bevel or other wheel gear with the driving shaft of the engine or other motive power, so that they all turn at the same speed. The rolls are also capable of being adjusted to suit the size to which the bloom is required to be rolled. When the bloom passes between the horizontal rollers it is thereby compressed or rolled to a thickness equal to the distance between such rollers, and when it passes between the vertical rollers the sides of the bloom are in like manner reduced to a thickness equal to the distance between such last mentioned rollers. Suitable screws are fitted to the housings or frames, whereby the distance between each pair of rollers can be regulated by the man in charge, and the bloom reduced to the required size by rolling the bloom backwards and forwards in the rolls, for which purpose ordinary reversing gear is required. From the foregoing description it will be understood that the invention consists of a four roll cogging mill, comprising four rolls, geared together, and so arranged that the four sides of the bloom are operated upon at the same time, each roller acting upon one of the four faces of the bloom.

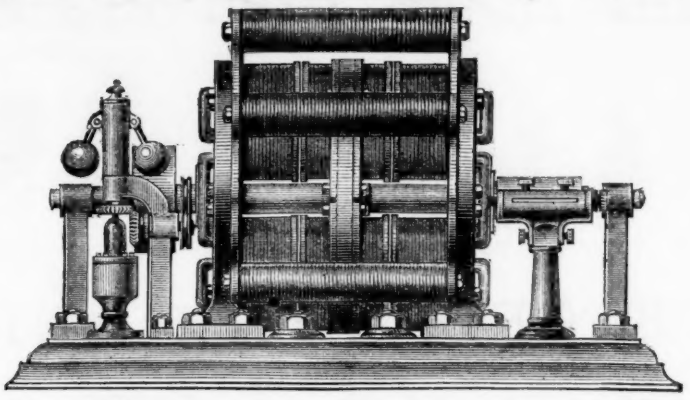
THE DYNAMO-ELECTRIC MACHINE SUPERSEDES EVERY KNOWN BATTERY.

WILLIAM ELMORE,

91, BLACKFRIARS ROAD, LONDON, S.E.

NO OTHER ADDRESS.

PRICES AND PARTICULARS GIVEN ON APPLICATION.



NO AGENTS.

ALL APPLICATIONS SHOULD STATE THE PURPOSE FOR WHICH THE MACHINE IS REQUIRED.

The "Elmore" Patent Dynamo-Electric Machine,

FOR DEPOSITING

NICKEL, SILVER, BRASS, BRONZE, COPPER, ETC., AND FOR ELECTROTYPING.

REPEATED COMPARATIVE TRIALS have proved that this is the **MOST POWERFUL MACHINE IN THE MARKET**, that it **NEVER REVERSES CURRENT**, and that it is very easily worked without special knowledge.

COMPLETE OUTFITS OR MATERIALS FOR NICKEL-PLATING, SILVER-PLATING, ELECTROTYPING, TINNING, BRONZING, &c.

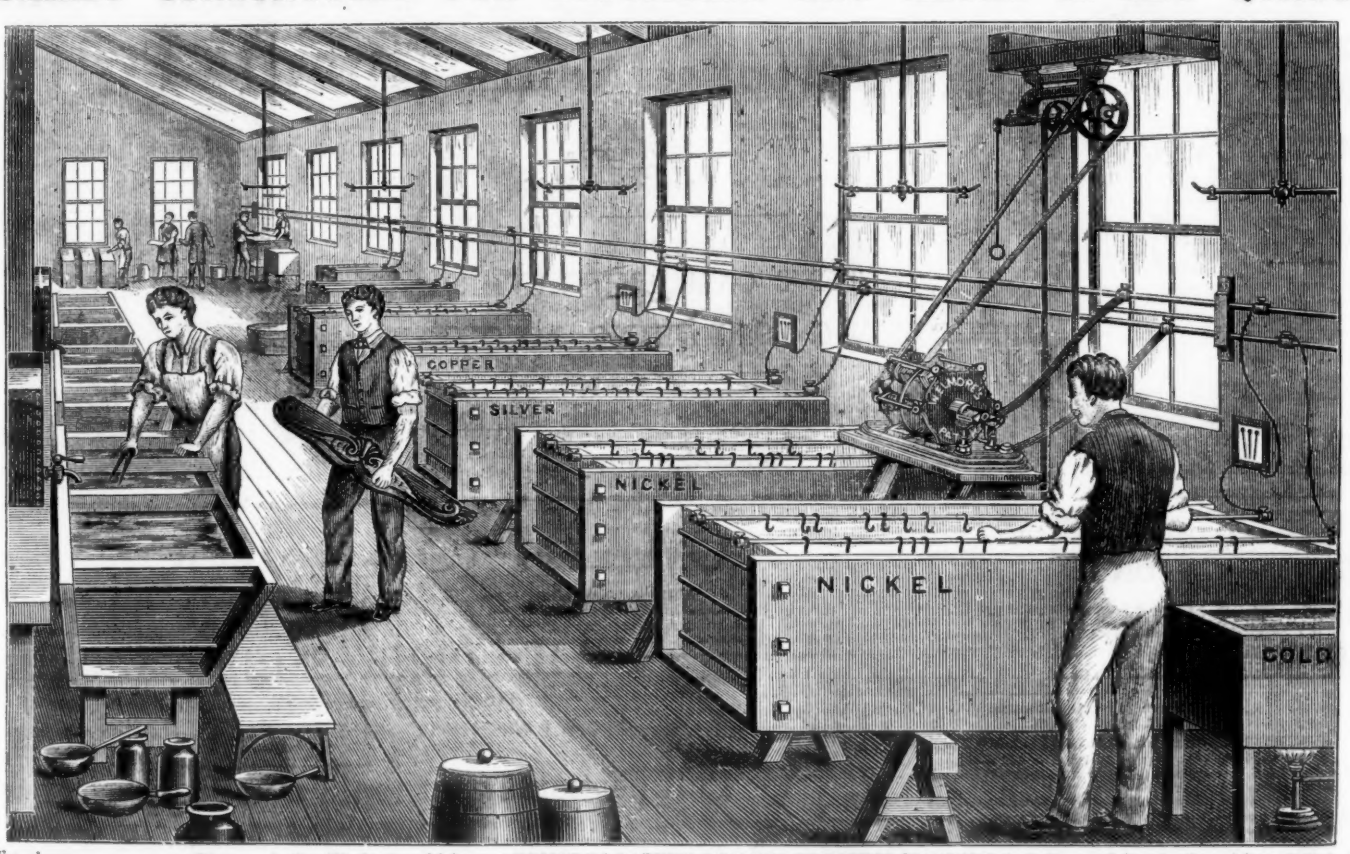
TO TIN-PLATE MANUFACTURERS AND GALVANIZERS.

The attention of TIN-PLATE MANUFACTURERS AND GALVANIZERS is respectfully directed to the NEW PROCESSES of manufacturing Tin-Plates by depositing the Metal by the current of an "ELMORE'S PATENT" DYNAMO-ELECTRIC MACHINE through aqueous solutions in contradistinction to the old processes of dipping in molten metal.

THE ELECTRO DEPOSITED METAL IS PERFECTLY REGULINE IN character, and the electric current may be so EASILY CONTROLLED as to coat with a MERE FILM OF METAL, OR A DEPOSIT OF ANY DESIRED THICKNESS. The great economy in the cost of plant and cost of production will be immediately self-evident. As nearly the whole of the existing plant can be used in the new process, the cost of altering the system will be comparatively trifling.

DYNAMO-ELECTRIC MACHINES

SPECIALLY CONSTRUCTED FOR DEPOSITING ANY METAL IN ANY QUANTITY.



The above represents an Electro-plating Works, in which an "ELMORE" PATENT DYNAMO-ELECTRIC MACHINE is being used for the deposition of Nickel, Silver, Copper, Bronze, Brass, Gold, Tin, Zinc, &c., from their Solutions.

From "INDUSTRY."

"By means of the dynamo-electric machine of Mr. William Elmore, the perfection of nickel-plating is obtained. Dynamo-electricity—that is, electricity produced by motive power—presents advantages which cannot be claimed by any galvanic battery known. Not only is the current produced at a far less cost, but it can be so regulated or controlled that the smallest article can be separately coated by a dynamo-electric machine, capable (in its full application) of depositing from 25 lbs. to 30 lbs. of silver per hour. It is a remarkable fact, moreover, that metals can be deposited from their solutions by dynamo-electricity in less than one-third of the time occupied by the ordinary battery in producing the same result. The quality of the deposit, in regard to its smoothness and reguline character, is greatly in favour of dynamo-electricity.

"Having had considerable experience in dynamo-electric machines, Mr. W. Elmore has been careful to note the defects and irregularities which some of the less skilfully constructed machines have presented, and thus he has been enabled to produce a really practical and effective machine, of great power, which may be thoroughly depended upon as being capable of giving the most satisfactory results for all purposes of electro-deposition, including gilding, silvering, brassing, nickeling, and electrotyping.

"The advantages of dynamo-electricity in the important art of electrotyping are beyond estimation. When it is known that a fine, clear, deposit (or 'shell') of copper, 800 ft. square feet, can be obtained by a dynamo-machine in less than three hours, without 'pin-holes,' and other defects common to battery deposits, it will be at once seen that the ordinary battery is effectually and unmistakably superseded.

"One of the most useful purposes to which dynamo-electricity can be applied is the production of chemically pure nickel solutions, and salts of nickel, for the electro-deposition of the metal. The vast amount of electricity generated in a dynam -machine enables one to dissolve nickel and other metals in their own solvents, far more economically, and in greater purity than by the ordinary method of treating metals. Electrical power obtained by the ordinary galvanic battery would be far too expensive for this purpose. The solutions formed by the aid of dynamo-electricity are not only purely and economically made; but they can be produced in far less time, and with comparatively little trouble and attention. To Mr. Elmore is due the honour of having introduced into this country the process of making pure nickel solutions and salts by means of dynamo-electricity. The boon he has thus conferred upon a large industrial class we need not dilate upon."

From "THE IRONMONGER."

"A still further improvement in the deposition of metals has been recently obtained by the introduction of the dynamo-electric machine of Mr. Wm. Elmore, which is in reality electricity produced by motive power. By this means the current is obtained at a much less cost, and I have seen it regulated to such a nicety that the smallest article could be separately coated in a full-sized vat. The deposit is also effected in about one-third of the time taken by a galvanic battery, and for smoothness and regularity of surface is greatly in favour of the dynamo process, which may be known from the fact that all Mr. Elmore's competitors, both in London and elsewhere, are fast adopting his machine in preference to the old process. He has, in addition, supplied it to many large firms throughout the country for electrotyping purposes, and the reports received from them are gratifying to the inventor. Mr. Elmore is also the author of an interesting little work on the subject, which may be read with interest by those who contemplate entering into what is fast becoming an important industry."

WILLIAM ELMORE, 91, BLACKFRIARS ROAD, LONDON, S.E.

DYNAMO-ELECTRIC MACHINES FOR ELECTRIC LIGHTING

DYNAMO-ELECTRIC MACHINES SPECIALLY CONSTRUCTED FOR DECOMPOSITION.

DYNAMO-ELECTRIC MACHINES FOR DEPOSITING ANY METAL IN ANY QUANTITY.

Printed by RICHARD MIDDLETON, and published by HENRY ENGLISH (the proprietors) at their offices, 26, FLEET STREET, where all communications are requested to be addressed.—*May* 21, 1881.